COMMUNICATION AND ITS ROLE IN INFLUENCING SHIPBOARD OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT IN CHINESE SHIPPING

Conghua Xue

Seafarers International Research Centre
School of Social Sciences
Cardiff University

This thesis is submitted to Cardiff University in fulfilment of the requirements for the Degree of Doctor of Philosophy

July 2012

DECLARATION

This work has not previously been accepted in substance for any degree and is not concurrently submitted in candidature for any degree.

Signed …… (candidate)

Date ……

STATEMENT 1

This thesis is being submitted in partial fulfilment of the requirements for the degree of PhD.

Signed …… (candidate)

Date ……

STATEMENT 2

This thesis is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references.

Signed …… (candidate)

Date ……

STATEMENT 3

I hereby give consent for my thesis, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

Signed …… (candidate)

Date ……

ACKNOWLEDGEMENTS

First and foremost, I would like to express my sincere appreciation to my supervisors, Professor David Walters and Dr. Ian Welsh, for sharing with me their insight, expertise and wisdom which helped me overcome the challenges one after another to eventually enable me to reach the finish line. My appreciation goes to distinguished Professor Theo Nichols for reading this thesis and providing some valuable comments and suggestions. My appreciation particularly extends to Professor Helen Sampson, Director of the SIRC, who played a key role in bringing me to Cardiff, and the Nippon Foundation for the award of their generous scholarship, without which all of this could never have occurred.

I am deeply grateful to my colleagues at the Nantong Shipping College in China for their full support in every aspect, particularly for the contact with the companies selected for this study and for their tolerance of my four-year absence from my work. I am also grateful to the management of the two companies for their agreement and support of my field work. I am really grateful to the crew members on the four ships I sailed, for their kindness, care and hospitality during my sailing voyages. I could never forget egg noodles and apples they served me when I occasionally lay on bed feeling terribly sea sick. For ethical reasons, I can not name them, but they are anonymous heroes in my heart.

My thanks go to the staff members in the SIRC and SOCSI Louise Deeley, Maria Goldoni, Sarah Venables and Elizabeth Renton for their excellent logistic services. My thanks also go to Dr. Nick Bailey, Dr. Syamantak Bhattacharya, Dr. Lijun Tang, Dr. Nippin Anand and some other fellow colleagues for their contributions of ideas and suggestions. My particular thanks go to Joe Gillhooly, an experienced Canadian lecturer who I have known for almost ten years, for his great enthusiasm editing some of the chapters and giving me valuable comments.

Finally, I must thank my wife Dong Xu and my seven-year-old son Fengtian Xue, for their full support and encouragement. Thank you for understanding that I could not spend much time with you during your short visit to Cardiff. Most of the time, you watched me off from the house window in the morning and waited me to get home in the late evening. Believe me our long-term separation has enhanced my love to you. In a similar vein, my thanks go to my parents-in-law and parents for helping taking care of my son.

ABSTRACT

The thesis looks at the communication between the management on shore and crew on board vessels, and examines the role of such communication in influencing shipboard OHSM in two Chinese chemical shipping companies. The study was conducted in the shore offices of two companies, as well as on four of their chemical tankers. The data was mainly collected by semi-structured interviews, supplemented by field observations, informal discussions and document analyses.

In order to better understand the research question, both shore management and crew's perspectives are considered. By examining major areas of communication closely related to OHSM, i.e., shore to ship communication for work support, shore to ship communication for management control, ship to shore communication for safety reporting, ship to shore communication for safety suggestions, the study presents the range of purposes behind communication between the two.

The study shows that communication between shore management and ship's crew is significantly influenced by divergent interests between the two. It reveals a set of socio-economic and cultural factors that underlie their communication. As a consequence, such communication has noticeable influence on crew's shipboard working practices as well as indirect effects on crew's health, safety and well-being. The findings of this study show that shore-ship communication is mainly in an asymmetrical form. It was generally disengaged with the concerns of OHSM. The communication contributed to an unfavourable working environment. The study suggested that communication achieved very limited outcomes for OHSM. The study concludes by calling policy makers as well as industrial practitioners to rethink the role of communication in effective OHSM and reshape maritime regulatory strategy in promoting OHSM in the shipping industry.

TABLE OF CONTENTS

DECLARATION ..... **II**

ACKNOWLEDGEMENTS ..... **III**

ABSTRACT ..... **IV**

TABLE OF CONTENTS ..... **V**

LIST OF FIGURES ..... **IX**

LIST OF TABLES ..... **IX**

LIST OF APPENDICES ..... **IX**

GLOSSARY OF ABBREVIATIONS ..... **X**

CHAPTER 1 INTRODUCTION **1**

1.1 BACKGROUND TO THE STUDY **1**

1.2 OUTLINE OF THE CONTENTS OF THE THESIS **6**

CHAPTER 2 LITERATURE REVIEW **10**

2.1 INTRODUCTION **10**

2.2 COMMUNICATION AND ORGANISATIONAL COMMUNICATION **10**

2.3 CHANNELS OF COMMUNICATION **12**

2.4 MEANS OF COMMUNICATION **13**

2.5 MANAGEMENT-EMPLOYEE COMMUNICATION **15**

2.5.1 Defining Communication in This Study 15
2.5.2 The Role of Management in Downward Communication 16
Organisational Support *17*
Management Control *19*
2.5.3 The Role of Employees in Upward Communication 23
Safety Reporting *23*
Employee Consultation *25*
2.5.4 The Role of Trade Unions 27
2.5.5 Implications for the Study (I) 28

2.6 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT IN THE CONTEXT OF SHIPPING **30**

2.6.1 OHSM Strategy in the Shipping and Its Relevance with Communication 30
2.6.2 A Comparative Assessment of the ISM Code 33
2.6.3 System Based Approach to OHSM and Its Application in Shipping 36
2.6.4 Implications for the Study (II) 39

2.7 DOING RESEARCH IN CHINA **40**

2.7.1 OHSM Status in China 40
2.7.2 Chinese Culture and Its Influence on Workplaces 43
2.7.3 The Development of Chinese Seafarers Labour Market 45

2.8 SUMMARY OF DISCUSSION **46**

CHAPTER 3 METHODOLOGY **49**

3.1 INTRODUCTION **49**

3.2 DOING QUALITATIVE RESEARCH **49**

3.2.1 Semi-structured Interview 50
3.2.2 Field Observation 51
3.2.3 Complementary Techniques 52

3.3 THE PILOT STUDY AND PREPARATORY WORK **52**

3.3.1 The Pilot Study 53

3.3.2 Company Identification, Justification and Access Negotiation 54
3.3.3 The Acquisition of Credentials 57

3.4 IN THE FIELD **58**

3.4.1 Field Work on Shore 59
3.4.2 Field Work onboard Ships 61

3.5 DATA PROCESSING **65**

3.6 ETHICAL ISSUES **66**

3.7 SUMMARY **67**

CHAPTER 4 INTRODUCTION TO THE CHEMICAL SHIPPING AND THE CASES FOR THE STUDY **69**

4.1 INTRODUCTION **69**

4.2 INTRODUCTION TO THE DEVELOPMENT OF CHEMICAL SHIPPING **69**

4.2.1 Types of Chemical Tankers 69
4.2.2 The Development of the Global Chemical Fleet 71
4.2.3 Major Players 72
4.2.4 The Pattern of Chemical Trading and Its Impact on China 75
4.2.5 The Chemical Shipping Sector in China 77

4.3 INTRODUCTION TO THE CASES **78**

4.3.1 Company 1 78
The Policy and Objectives of OHSM *79*
The Structure and Functions *80*
4.3.2 Company 2 84
The Policy and Objectives of OHSM *85*
The Structure and Functions *86*
4.3.3 A General Assessment 90

4.4 SUMMARY **91**

CHAPTER 5 (SHORE-TO-SHIP) COMMUNICATION FOR WORK SUPPORT **92**

5.1 INTRODUCTION **92**

5.2 THE MANAGEMENT **92**

5.2.1 Operational Support 92
5.2.2 Problem Solving 94
5.2.3 Types of Support 96

5.3 THE CREW **97**

5.3.1 Technical Support 97
Safety Education *98*
Limited Supporting Role *100*
5.3.2 Safety Information Support 101
Learning Lessons *102*
Self-Inspection *103*
Safety Knowledge *104*
5.3.3 Material Resource Support 106
Insufficient Supplies *106*
Potential Impact on OHSM *108*

5.4 SUMMARY **110**

CHAPTER 6 (SHORE-TO-SHIP) COMMUNICATION FOR MANAGEMENT CONTROL **112**

6.1 INTRODUCTION **112**

6.2 COMMUNICATION DURING SAILING **112**

6.2.1 The Management 112
Crew's Decisions Respected *112*
'Approved' Crew's Decisions *113*

6.2.2 Pressure on a Ship's Captain 115
The Incoming Call: Captain, Keep Going – You Decide *115*
Captain's Authority Revisited *120*
6.2.3 Other Crew Members: We Listen, Given the Difficulties 121
Compliance of Collective Decisions *121*
Hectic Schedules and Long Working Hours *123*

6.3 COMMUNICATION DURING A SHIP VISIT **127**

6.3.1 The Management 127
The Need for Face-to-Face Communication *127*
Understanding Real Situation *129*
Assessing a Crew's Work *130*
6.3.2 The Crew 133
The Impact on a Crew *133*
The Impact on Crew's Work *135*
Lower Ranking Crew: No Common Ground for Talking *139*

6.4 SUMMARY **140**

CHAPTER 7 (SHIP-TO-SHORE) COMMUNICATION FOR SAFETY REPORTING **142**

7.1 INTRODUCTION **142**

7.2 THE MANAGEMENT **142**

7.2.1 'We Encourage Reporting' 142
7.2.2 'The Less (Reporting), the Better' 144

7.3 THE CREW **145**

7.3.1 The Need for Reporting 146
7.3.2 Nonconformity Reporting 147
Incompetence of Safety Management *148*
The Impact on Shore Management *149*
Deduction of Safety Bonus *151*
7.3.3 Accident Reporting 152
Concern of Liability *154*
'Violation of Procedures' *154*
7.3.4 Hazardous Situation Reporting 155
Potential Affect on Individuals *157*
Detrimental to Crew Solidarity *158*
Rule Restriction *159*
7.3.5 Under-reporting and Biased Reporting 160

7.4 SUMMARY **163**

CHAPTER 8 (SHIP-TO-SHORE) COMMUNICATION FOR SAFETY SUGGESTIONS **165**

8.1 INTRODUCTION **165**

8.2 THE MANAGEMENT **165**

8.2.1 Improvement of the Management System 165
8.2.2 Reasonable Suggestions 166

8.3 THE CREW **167**

8.3.1 The Managerial Influence 168
Response to the Revision of the System *168*
Response to Reporting Good Practice *169*
'Formalistic' Encouragement *170*
8.3.2 Shipboard Hierarchy 171
8.3.3 The Cultural Elements 173
Offending Seniority *173*
Relationship *174*
'Being Conservative' *174*
Flattery *175*
8.3.4 Trade Unions on board 176
8.3.5 The Fluidity of Seafaring Occupations 179

8.3.6 Peer Communication 180

8.4 SUMMARY **182**

CHAPTER 9 COMMUNICATION: ITS CONTEXTS AND INFLUENCES ON CREW'S OHSM PRACTICE **185**

9.1 INTRODUCTION **185**

9.2 CONTEXTS OF COMMUNICATION – FACTORS UNDERLYING THE NATURE OF WORKPLACE AND ORGANISATIONAL COMMUNICATION **186**

9.2.1 Hierarchy, Power and Discipline in Management 186
9.2.2 Efficiency, Profit and Safety 193
9.2.3 Crew's Participation in OHSM 196
9.2.4 Other Influences 198
The Chinese Cultural Context *199*
The Role of Monitoring Compliance *200*

9.3 COMMUNICATION AND ITS INFLUENCE ON OHSM PRACTICE **202**

9.3.1 The Effectiveness of Shore Support 202
9.3.2 The Effectiveness of Management Control 202
9.3.3 The Quality of Feedback in Safety Reporting and the Limitations of Its Role in Organisational Learning 205

9.4 INDIRECT EFFECTS ON CREW'S HEALTH, SAFETY AND WELL-BEING **207**

9.4.1 Psychological Pressure 208
9.4.2 Physical Stressors 209
9.4.3 The Combined Effect 210

9.5 SUMMARY OF DISCUSSION **211**

CHAPTER 10 CONCLUSIONS **214**

10.1 INTRODUCTION **214**

10.2 MAJOR FINDINGS **215**

10.2.1 Asymmetrical Communication 215
10.2.2 Communication Disengaged with the Concern of OHSM 217
10.2.3 Communication Contributing to Unfavourable Working Environment 218
10.2.4 The Limited Outcome of OHSM 219

10.3 IMPLICATIONS OF THE FINDINGS FOR THE ROLE OF COMMUNICATION IN EFFECTIVE OHSM **221**

10.4 IMPLICATIONS FOR MARITIME REGULATORY STRATEGY **222**

10.5 SUGGESTIONS FOR FUTURE STUDIES **224**

BIBLIOGRAPHY **227**

APPENDICES **242**

APPENDIX 1: PARTICIPANT INFORMATION SHEET **242**

APPENDIX 2: INTERVIEW GUIDE – SHORE MANAGEMENT **244**

APPENDIX 3: INTERVIEW GUIDE - CREW **246**

APPENDIX 4: SHORE MANAGEMENT INTERVIEWEES LIST **248**

APPENDIX 5: CREW INTERVIEWEES LIST **249**

LIST OF FIGURES

FIGURE 1: COMMUNICATION PROCESS ON PLAN-DO-CHECK-ACT FOR HEALTH AND SAFETY 21
FIGURE 2: THE ORGANISATIONAL CHART (C1) 81
FIGURE 3: THE ORGANISATIONAL CHART (C2) 87

LIST OF TABLES

TABLE 1: SAILING VOYAGES 62
TABLE 2: SHIPS' PARTICULARS 62
TABLE 3: A SURVEY OF THE WORLD CHEMICAL TANKERS FLEET 72
TABLE 4: THE OBJECTIVES OF OHSM (C1) 79
TABLE 5: THE OBJECTIVES OF OHSM (C2) 85
TABLE 6: CATEGORIES OF ACCIDENTS 152

LIST OF APPENDICES

APPENDIX 1: PARTICIPANT INFORMATION SHEET 242
APPENDIX 2: INTERVIEW GUIDE – SHORE MANAGEMENT 244
APPENDIX 3: INTERVIEW GUIDE - CREW 246
APPENDIX 4: SHORE MANAGEMENT INTERVIEWEES LIST 248
APPENDIX 5: CREW INTERVIEWEES LIST 249

GLOSSARY OF ABBREVIATIONS

ACFTU	All China Federation of Trade Unions
BIQ	Barges Inspection Questionnaire
CDI	Chemical Distribution Institute
CoC	Certificate of Competence
DWT	Dead Weight Tonnage
EEC	European Economic Community
EQUASIS	European Quality Shipping Information System
EU	European Union
FSC	Flag State Control
GMDSS	Global Maritime Distress and Safety System
HSE	Health and Safety Executive
ILO	International Labour Organisation
IMO	International Maritime Organisation
INTERTANKO	International Association of Independent Tanker Owners
IPTA	International Parcel Tankers Association
ISM Code	International Safety Management Code
ISO	International Organisation for Standardisation
JIT	Just-in-Time
LRFP	Lloyd's Register Fair Play
MARPOL	International Convention for the Prevention of Pollution From Ships
MEPC	Marine Environment Protection Committee
MSA	Maritime Safety Administration
MSC	Maritime Safety Committee
MSDS	Material Safety Data Sheet
NMD	Norwegian Maritime Directorate
NSM Code	National Safety Management Code
OCIMF	Oil Companies International Marine Forum
OHS	Occupational Health and Safety
OHSAS	Occupational Health and Safety Assessment Series
OHSM	Occupational Health and Safety Management
OHSMS	Occupational Health and Safety Management System
PPM	Part Per Million

PSC	Port State Control
QA	Quality Assurance
QSEMS	Quality, Safety and Environment Management System
QSMS	Quality and Safety Management System
SIRC	Seafarers International Research Centre
SIRE	Ship Inspection Report Programme
SOLAS	Safety of Life at Sea Convention
TLV	Threshold Limit Value
TMSA	Tanker Management and Self Assessment Guide
TQM	Total Quality Management
UN	United Nations
UTI	Ullage, Temperature and Interface
VIQ	Vessel Inspection Questionnaire
VPQ	Vessels Particulars Questionnaire
WCC	World Communication Centre
WTO	World Trade Organisation

CHAPTER 1 INTRODUCTION

The thesis explores the role of communication in influencing shipboard Occupational Health and Safety Management (OHSM) in two Chinese chemical shipping companies. The study investigates the role of communication in the onshore management of Occupational Health and Safety (OHS) onboard ships by operating companies and the response of seafarers. For this purpose, the thesis examines key communication processes between shore and ship such as those involving technologically mediated communication as well as ship visits. It explores the immediate and underlying influences behind shore-ship communication and how this communication influences the practice of OHSM onboard ships and seafarers' OHS. This study uses qualitative methods, which include semi-structured interviews, field observations along with informal discussions and document analysis.

1.1 BACKGROUND TO THE STUDY

The study was initiated from a systematic review of the current literature in relation to the research topic. In particular, it was shaped on the basis of the analysis of the literature and identification of the gaps that existed in previous studies in relation to communication and OHSM.

In day-to-day life communication is one of our main activities, and every aspect of our lives is affected by our communication with other people (Littlejohn and Foss, 2008). In a similar vein communication in organisational contexts (organisational communication) is equally important. It is a key to the functioning of an organisation, and is ‘inseparable from and essential to everything that occurs in organisation life’ (Fisher, 1993, p.3). Many authors have argued that regular and direct communication is a valuable characteristic of any organisation (Pace and Faules, 1994, Jablin and Putnam, 2001; and Vuuren *et al.*, 2007). Michael *et al.* (2006) argued that good communication features free and open conversation between management and employees about solutions to routine and non-routine problems, which often results in mutually beneficial behaviours over the long run. Appleman and Bratnick (2001) found that effective communication helps foster employees’ positive safety attitudes and consequently their work practices. Hofmann and Morgeson (1999), in a survey in the wood products manufacturing industry in the US, showed that good supervisor-employee communication tended to produce employees who

were more likely to have a better understanding of safety issues such as operational procedures, raise safety concerns and experience fewer incident occurrences. In general, both common sense and the multiple studies on communication suggest that good communication in organisational contexts can lead to the improvement of employee's safety awareness and performance.

More formally, authors also argue that proper communication helps shape the organisational safety environment. The quality of communication is well recognised as a main factor influencing efficiency and effectiveness of organisational performance and achieving a positive safety environment (Fisher, 1993). This view is widely agreed by other authors such as Clarke (1999), Appleman and Bratnick (2001), and Leiss (2004). In the shipping industry it has been similarly argued that improved communication between shore management and ship's crew is a prerequisite in achieving an effective maritime safety environment (ISF, 2000; Veiga, 2001; Valkonen, 2000; IMO, 2002a; Anderson, 2003; Thebault, 2004).

Therefore, these two streams of literature, that concerning communication and organisational behaviour generally and that addressing OHS more specifically, both highlight the importance of proper communication in influencing employee's safety behaviours and the organisation's safety environment. However, relatively few previous studies have focused in detail on the role of communication in OHSM. Also, those that have, tend to rely on quantitative questionnaire-based social psychological methods (Klauss and Bass, 1982, Appleman and Bratnick, 2001, Ridder, 2006; and Shaw *et al.,* 2007). While valuable within their own field, these approaches are limited in the extent to which they can provide an in-depth understanding of social factors, social relations or social processes behind communicative behaviours (Ellis *et al.*, 2010; Oltedal, and Wadsworth, 2010). Fundamental to the approach adopted in the present study therefore, is the idea that more sociologically orientated qualitative methods may provide additional insights on the role of communication between management and workers and vice versa in achieving effective OHSM in organisations.

The importance of OHSM has been widely discussed in the literature. Starting from the late 1970s, this systematic approach to OHSM has been increasingly widespread throughout most developed nations as well as some developing ones (Quinlan and Mayhew, 2000). In

general, an international trend over the past decades has been a greater focus on systematic management of health and safety within organisations, which has become the *'leitmotif'*, of current OHS regulation and practice, particularly in developed westerns counties (Walters, 2005, p.26). However, a number of previous studies suggest that the increased adoption of Occupational Health and Safety Management Systems (OHSMSs) by organisations in a range of different industries has led to both 'positive and negative' OHS consequences (Nichols and Tucker, 2000; Walters, 2005; Robson *et al.*, 2007; Bornstein and Hart, 2010, Walters, Bhattacharya and Xue, 2011). We are as yet unclear as to what are the underlying causes of such 'positive or negative consequences' and as Robson (2007, p.333) and her colleagues comment, there is a need for better understandings through further ongoing studies on the effectiveness of OHSM in different work situations.

As one of the major components of an OHSMS, communication influences workplace health and safety management and practice. Among all forms of organisational communication, that between management and employee[i] and vice versa, particularly highlights the importance of their interaction/cooperation for organisational health and safety management (Kamp, 2009). Humphreys (2007) sees employer-employee engagement as an essential channel to improve OHS. Larsson (2000, p.199) and Mouritsen and Larsen (2005) argue that the success of OHSMSs relies on both management and employees to maintain good practices in health and safety activities, while communication between them plays a key role in ensuring these activities are completed. Michael *et al.* (2006) suggest management-staff communication is an area worthy of further investigation given its potential to enhance safety performance. Thus, focusing on communication between the two major actors (management and employee) in an organisation best explains how and to what extent it affects workplace OHSM.

This study focuses on the chemical shipping industry. The shipping industry generally is described as 'high-risk' by many authors, including Anderson (2003), Havold (2005), and Oltedal and Wadsworth (2010). Past research showed a higher reported frequency of incidences in high-risk industries than others (Walters, 2005). Research findings by Lindoe (2007) also showed that seafarers' fatality and injury rates are much higher than the average in land based industries in many seafaring countries. Therefore, it is important to conduct research in relation to shipboard OHSM. Moreover, the significance of making a

[i] The author acknowledges that not all workers are employees; they were in this study.

study in the chemical shipping industry is acknowledged, since 'a substantial proportion of global chemical products' and 'many substances that are known to be hazardous to health' are transported by ship (Walters, 2007, p.62).

The introduction of the International Safety Management (ISM) Code in 1998 brought about fundamental changes to the international shipping industry and made mandatory a system-based approach to OHSM in shipping organisation. The review of maritime literature suggests that comparatively little attention has been given to what makes for effective OHSM in this industry and lack of studies was evident (Psarros *et al.*, 2010; Oltedal and McArthur, 2011). Bailey *et al.* (2006) pointed out that interaction/communication is a central feature of safety related activities in the shipping industry, and ineffective communication can result in serious incidents. The communication between shore management and ship's crew was particularly addressed by the Swedish Shipowners' Association (SSA, 2003). The Association asserted that the 'distance' between the two should be 'shortened' and integrated into a single unit by mutual effective communication for common goals. After the introduction of the Code, a global survey was conducted by the International Maritime Organisation (IMO) (2005). Although the survey suggested that communication between shipboard and shore-based staff may have improved, it could not provide detailed evidence to support this. Furthermore, it did not establish the cause-effect relationship between communication between shore and ship and its influence for shipboard OHSM. Bhattacharya (2009) conducted a small scale qualitative study in two oil tankers companies with special focus on a few selected elements from the broad composition of an OHSMS. The justification of such a choice seemed to be weak and he did not directly address the core issue - the interaction (communications) between the management and employees. Such literature as there is, shows the gap between and suggests the desirability of conducting this empirical study. Indeed the effective implementation of the regulatory requirements on safety management at sea – the ISM Code – depends to a large extent on ensuring adequate communication between shore management and ship personnel (Celik, 2009). This thesis therefore attempts to make a contribution to knowledge concerning the communication between the two with an attempt to further explore how such communication affects shipboard OHSM practice.

In the light of the analysis of current literature on the studies of communication and its relations to OHSM in the shipping industry, an overarching research question for this

research project was shaped: How effective are existing communication practices between management on shore and crew onboard in delivering the aims and objectives of OHSM? In order to better address the main research question, the following sub-questions were developed:

1) How effective is shore-ship communication as it pertains to OHSM?
2) What are the immediate and underlying factors that influence shore-ship communication?
3) In which way does shore-ship communication influence shipboard OHSM? What are the consequences?
4) What are the implications of this study for effective OHSM?

The study will focus on shore management in two Chinese chemical shipping companies and four vessels operated by them. Based on analysis of qualitative evidence gathered from interviews and some supplementary techniques conducted in company offices and on-board ships during their voyages, the study will identify inferences concerning the likely role of communication in the effectiveness of OHSM and maritime regulatory strategy in the shipping industry more widely. The general aims for the study are elaborated, and more detailed account of the research questions presented in Chapter 2, following the systematic analysis of the relevant literature in relation to this research project.

The study was conducted in Chinese shipping companies all having Chinese managers and crew. As the largest developing country, China has been ranked the fourth largest shipping nation in the world (UNCTAD, 2007). The rapid expansion of China's ocean fleet brings about significant challenges for the OHSM. A ‘poor safety record’ was witnessed by an exploratory study in the Chinese shipping industry (Sampson and Wu, 2007). In general, Frick *et al.* (2000) found that systematic OHSM has become popular in developed countries, but there is little evidence to show that it is anywhere nearly as fully recognised in developing countries. This study provides an opportunity to produce some fresh empirical evidence from the perspective of shore-ship communication on the operation of OHSMSs on Chinese chemical shipping companies. Previous studies on OHSM in the maritime industry have tended to focus on multinational crews (which are fairly typical in the industry globally). However, the subjects of the present study were all Chinese. A study among managers and crew with a singular nationality can avoid the ‘particular issues’ raised from a multicultural workforce (Gunningham and Johnstone, 1999). In China, all

Chinese ships are manned by Chinese seafarers (Wu, 2004). In this sense, the study among Chinese managers and crew is unique.

1.2 OUTLINE OF THE CONTENTS OF THE THESIS

The thesis has been organised into a further nine chapters following this introduction. They will provide an outline of the relevant background literature, in which the key issues for the study will be explored at length and research questions elaborated. This is followed by an explanation of the research design and methods used in the collection and analysis of empirical data informing the research. Four further chapters are devoted to the analysis of this data and a fifth presents a discussion of the results in the light of the literature already reviewed. Following the discussion chapter, major conclusions from this study are presented in the end of the thesis. These chapters are outlined in the following paragraphs.

Chapter 2 reviews several different areas of knowledge that closely related to this research project. Broadly, it consists of three subjects: communication, OHSM in the context of shipping and contextual information for this research. The communication literature highlights the importance of communication between management and employees in terms of the key elements relating to OHSM. The OHSM literature gives a broad overview on the development of the OHSM in the international shipping industry. Both parts of the literature help us to understand how and in which way management-employee communication affects workplace OHSM practice. The review of the literature was followed by the presentation of the detailed research questions that have been derived from it. A third part of the literature describes the contextual information with regard to the OHS status in China, the Chinese cultural influence on the workplace and a brief introduction to the Chinese seafarers' labour market. This Chapter discusses the wider issues of OHSM in the literature to provide a context for the specific issues involved in OHSM in the shipping industry. It is ended with a summary of literature discussion.

Chapter 3 introduces the research design of the study and the research methods used. The experience from the pilot study is summarised. Also, preparations for the field work which included company identification, justification of the choice and negotiation for access, as well as participation in a training programme for the acquisition of credentials for sailing are described. The progress of the field work in two companies and four of their ships is elaborated. Finally, techniques for the analysis of the data are outlined and consideration of

the way in which the research method addressed ethical issues that arose throughout this study is given. In general, this chapter presents a holistic view of occurrences in the field.

Chapter 4 locates the study in a wider description on the development of the chemical shipping industry at the both international level and national level. It describes different types of chemical tankers, the global chemical fleet, major industrial players, and the pattern shift of global chemical production and trading that had significant implications for the development of the chemical shipping fleet. There follows a brief introduction to the development of the chemical shipping industry in China. Furthermore, since this study is based on two chemical shipping companies, their basic information is presented and summarised. The chapter includes an introduction to the policy and objectives of OHSM and the structure and functions of the companies, based on which a comparative assessment on them is made. It helps us to understand the responsibilities of each position in the organisational hierarchy that underpins the communication between shore management and ship's crew.

The next four chapters (Chapter 5-8) present the findings from the field research. Chapter 5 assesses the effectiveness of shore to ship communication for the purpose of supporting the operation of OHSMSs on board ships. The examination of shore-ship communication revealed three types of shore support: technical support, safety information support as well as material resource support. From management's perspective, they showed a positive concern about OHSM problems occurring on board ships. From the crew's perspective, communication for technical support to ships played a moderate role in shipboard problem solving; communication for safety information support played a positive role in coping with potential threats to ship's safety management; but communication for material resource support was found to be unsatisfactory. On the whole, the result shows that the shore management failed to give substantial support to ships. The chapter concludes that, due to the lack of sufficient material resources as an essential pre-condition for OHSM, some inherent problems in relation to shipboard OHSM remain unsolved and shipboard OHSM was apparently undermined.

Chapter 6 assesses the effectiveness of shore to ship communication for the purpose of management control. The assessment is conducted in two typical scenarios: technology-based communication and ship visit communication. As for the

technology-based communication, although the shore management showed their respect to ship's crew and a willingness to have more communication with crew for better OHSM onboard ships, the crew's opinion was divergent. The study shows that senior crew's independent decision making power particularly that relating to ship's sailing, was strongly influenced by the shore management. It highlights an emergent dichotomy of purpose behind communication between the management on shore and crew on board. As a result, crew bore significant safety-related pressures that were imposed by the company management through this form of communication. As for the ship visit (face-to-face) communication, it shows that the management tended to focus more on the crew's performance and behaviours than the improvement of their working environment. These results indicate that ship visits did not improve management-crew communication, and its role in improving shipboard OHSM practice was rather limited.

Chapter 7 examines the role of ship to shore communication in safety reporting. In line with the way the ISM Code categorises safety reports, this chapter examines three types of reporting, i.e., nonconformity reporting, accident reporting and near miss reporting. From the management's perspective they strongly encouraged crew to report whatever problems crew encountered on board. However, the data suggests that from the crew's perspective, they did not feel that they were really encouraged to do so. The chapter identifies and distinguishes some immediate factors that affected crew decisions on making these reports. The findings show that the problem of under-reporting and biased reporting was prevalent among crew on all four ships and suggest some reasons for this that are embedded in the social and economic relations surrounding the precarity of work at sea.

Chapter 8 examines the role of ship to shore communication in reporting crew's suggestions for the purpose of improving shipboard OHSM practice. Its analysis indicates that while from the management's perspective, they welcomed crew's reasonable suggestions for improving OHSM, the crew were reluctant to make any constructive suggestions to the shore management. The chapter explores a range of factors affecting crew's willingness of doing so. As with the previous chapter, the data discussed in this chapter suggests the lack of crew's contributions to the improvement of OHSM practice can be explained with reference to a set of social and cultural factors that are embedded in the Chinese context. As a consequence, the study revealed more peer communication on good practice on board a ship or between other ships of a company than ship to shore

upward communication to management.

On the basis of the preliminary findings in the previous 4 chapters (Chapter 5-8), Chapter 9 discusses the contexts of communication – factors underlying the nature of workplace and organisational communication. The chapter identifies the greatest factor that influences shore-ship communication, namely a company's underlying profit motive. Also, social, cultural and industrial influences are considered. Following the identification of these influential factors, the chapter continues to explore the impact of shore-ship communication on OHSM practice. The discussion shows that management's support for and control over shipboard OHSM activities, the use of OHS indicators, and the objective of continuous improvement of OHSM failed to achieve the expected outcomes of OHSMSs. Furthermore, the study reveals that ship-shore communication can contribute to the increase of both physical and psychological pressures on crews. It can lead to indirect effects on crew's health, safety and well-being.

Finally, Chapter 10 discussed the conflicts of interests behind the divergent approaches to safety related communication between shore and ship. Then the chapter presents the major findings from the study. The findings suggest the need for rethinking the role of communication in OHSM as well as the effectiveness of maritime regulatory strategy. The chapter concludes by making some comments on future studies in this subject area.

To sum up, this introductory chapter has briefly outlined the nature of the study presented in this thesis. It has provided some background highlighting the relevance and importance of such a study by briefly indicating the scope and limitations of previous work on communication in relation to OHSM in organisational context. It identified a comparative lack of sociologically informed work on the role of communication between the management and employee in influencing OHSM in the maritime industry. It presented the broad research question that the present work addresses and has explained the location of the study in the Chinese chemical shipping industry. Finally it has presented an outline of the structure of the thesis that follows. This begins in the following chapter with a review of the relevant research literature and the consequent development of the more detailed research questions addressed in the thesis.

CHAPTER 2 LITERATURE REVIEW

2.1 INTRODUCTION

This thesis examines the range of shore-ship communications and its influence on shipboard OHSM in the Chinese chemical shipping companies. There is a need to review the existing literature which addresses this research topic. What follows is a general review of the literature on relevant aspects of communication, organisational communication and channels and means of communication. The focus shifts to communication between management and employee, a key link that underpins the workings of an OHSMS. Major elements of communication between them that affect OHSM practice are identified and discussed. Next is a discussion of pertinent OHSM literature. This includes a brief overview of OHSM strategy in the shipping industry, a comparative assessment of the ISM Code, and a brief introduction to system based approaches to OHSM relevant to this study. Implications for this study and detailed research questions will also be discussed and presented sequentially along with the review of the literature. Since my research was performed in China, I include an account of the Chinese national context to set the local scene for this study. The Chapter concludes with a summary of the discussion of the literature as well as the aims of the study.

2.2 COMMUNICATION AND ORGANISATIONAL COMMUNICATION

Communication is omnipresent in human societies. The word *communication* itself has many definitions subject to the interpretation of different disciplines and it can take place in many forms (Frank and Brownell, 1989; Donnelly and Neville, 2008). Mainly, the essence of communication is conveyance of certain information (or a message) from one party (side) to another. Hampel (2006) named two ways of understanding communication, i.e., in technology and in the social sciences. The former means that communication is independent from its context, while the latter emphasises the context-dependence of the communication process by social scientists. The notion of communication I am going to examine is closely related to the latter. Hampel (2006) addresses context-dependent communication as a form of social interaction or a mutual construction of sense. Under such circumstances, a sender is not just sending information but is primarily using signs and symbols which have meanings and are defined within a certain shared social and cultural context (Jones *et al.*, 2004). Thus, the examination of communications between different parties brings out wider social implications and contributes to contemporary social

science research. This study examines communication in the organisational contexts of the Chinese merchant marine, i.e., organisational communication. Current literature related to this topic is reviewed and examined below.

Organisational communication is similar to ordinary forms of communication, however, the difference is that organisational communication is 'part of an ongoing process that includes patterns of interaction between organisation members that both emerge from and shape the nature and actions of the organisation and the events within it' (Fisher, 1993, p.4). Some authors such as Adair (1988) and Michael *et al.* (2006) found that adequate communication results in greater productivity, because employees direct their work more effectively and cooperate more with their leaders. Haney (1986) argues that communication contributes to harmonious working relationships between management and employees. While the positive role of organisational communication is generally accepted by many authors (see Chapter 1), the negative consequences of poor communication are equally significant. In a general sense, poor communication is 'a primary reason for substandard behaviours ranging from poor safety performance to low productivity and morale' (Michael *et al.*, 2006, p.471). It 'upset the whole rhythm of production, lessened cooperation between employees and their managers and created ill-feeling' (Adar, 1988, p.1). Moreover, the neglect/lack of communication or inability to communicate clearly is 'at the heart of a great deal of industrial unrest, job dissatisfaction and operational inefficiency' (Wilkinson, 1989, p.4). Failures of communication are very costly, and this cost cannot be measured merely in terms of the hours lost (Adar, 1988).

In the health care sector, communication failures accounted for a majority of unexpected adverse events in patients (Leonard *et al.*, 2004). Lingard *et al.* (2004, p.330) found that '36.4 percent of communication failures resulted in visible effects on system processes which included inefficiency, team tension, resource waste, work-around, delay, patient inconvenience, and procedural error'. The direct causes identified were that team members failed to convene to discuss key issues before a case, and decisions were usually made regardless of relevant team members' presence, and much communication tended to be reactive. While the failure of communication in health care sector showed 'moderate' negative consequences, its failure was seen to be implicated in many disasters in some other industries (Turner and Pidgeon, 1997). The investigation of the *Esso* gas explosion accident in Australia revealed the failure to communicate critical risk information between

managers and shop floor workers (Hopkins, 2000). Thus, it is clear that communication between people should be managed and carefully coordinated for the purpose of avoiding implicit and/or explicit problems resulting from misunderstandings and lack of information communication (Leiss, 2004).

As a whole, the literature presented in this section and in Chapter 1 shows universal recognition of the importance of communication, particularly in organisational contexts. While the outcome of good communication is relatively positive, the consequences of bad communication, particularly the failure of communication in an organisation are multifaceted. Some are damaging and even disastrous. Thus, sketch of the literature above shows the usefulness of doing research on communication in organisational contexts.

2.3 CHANNELS OF COMMUNICATION

Communication is achieved through certain channels. In an organisational context, a wide body of literature distinguishes three channels of organisational communication: downward communication, upward communication and horizontal communication (Pace and Faules, 1994; Byers, 1997; Miller, 1999). First, downward communication refers to the communication from a higher level to a low level within an organisational hierarchy through certain channels. Contents of communication may contain, but are not limited to, information or messages such as organisational policy and practices, instructions or orders, operational procedures and quality control measures. Downward communication is essential to the efficient functioning of an organisation. It affects employees' sense of acceptance, recognition, security and organisational efficiency (Scheider *et al.*, 1975, p.49). Second, upward communication means communication from a lower level to a higher level along the hierarchy through certain channels. It is based on organisational demand (or reporting) systems designed for monitoring various workplace activities. This channel provides valuable information for decision making which is crucial for effective functioning of an organisation (Byers, 1997). Third, horizontal communication refers to the communication that is not classified as upward or downward one. Typically, interdepartmental and peer communication can be regarded as such examples. An organisation will benefit from horizontal communication that potentially promotes coordination or cooperation among members of the organisation. Where there is little opportunity for upward (or downward) communication, people tend to talk with their peers to find out information they need or desire (Neher, 1997).

In most scenarios, organisational communication occurs in a vertical (downward or upward) direction. Communication between management and employees dominates this process. The main focus of this thesis lies in exploring communication between shore management and ship crews. This management-employee communication will be further detailed in section 2.5.

2.4 MEANS OF COMMUNICATION

The following section introduces the primary means of communication in the shipping industry, i.e. the means of communication between shore and ship.

Generally, communication is achieved in forms of spoken language (verbal communication) or written symbols (written communication) (Harris, 1987). Verbal communication includes face-to-face communication and technology-mediated verbal communication. Klauss and Bass (1982) found that managers relied more heavily on verbal channels than on written ones in land based industries. Face-to-face communication is frequently preferred and more satisfying than technology-based communication such as telephone conversations. It is regarded as the richest medium for communication (Fisher, 1993), because it permits instant feedback and accommodates multiple cues such as body language. Miller (1999, p.58) emphasised the role of face-to-face communication, because it has 'the highest level of social presence and should serve best to satisfy higher-order needs'. Its richness fits it to deal with tasks with a high level of uncertainty (ibid). Garrison and Bly (1997) found that workers often can identify and describe problems better in face-to-face settings. They argue that in most situations, 'this is the most effective form of communication' (ibid, p.40). In the shipping industry a ship visit is the way of communication for the company management to meet crew face-to-face. These visits are usually arranged at regular intervals. Commonly, the arrangement is made when a ship calls into a domestic port where it is convenient for a visit.

Technology-mediated verbal communication is an alternative means of communication. Teleconferences and telephone communication are examples of this mode of verbal communication. In view of the development of communication technology that is applied in the shipping industry, the telephone is a popular means of communication between shore and ship. In general telephone is the most commonly used tool for communication over

long distances. The biggest advantage for telephone communication is that it is the fastest communication channel and provides real-time communication (Wikipedia, 2010). While Wan (1988) identified the limited role of communication media in his study of British and Chinese shipping companies in the 1980s, the limits have become less of a problem since the early 1990s due to the well established Global Maritime Distress and Safety System (GMDSS)[ii] dedicated to maritime communication. Telephone communication within the GMDSS can be via satellite telephone communication or use terrestrial Medium Frequency (MF)/High Frequency (HF)/Very High Frequency (VHF)[iii] radio telephone communication. Verbal communication can be achieved anytime and anywhere in the world. It is essential for shore-ship communication involving mutual negotiation, immediate decision making and emergent problem solving. Furthermore, independent of onboard dedicated communication systems, mobile phones can also be used for communication when ships sail along coastal waters where land mobile networks are available. Satellite phone pricing (4.66 USD in peak hours and 2.87 USD in off peak hours) [World Communication Centre (WCC)] (2011) means the use of mobile phones is usually prioritised, unless service is unavailable.

Written communications also play a role as an indispensable means of contact in organisational communications. As suggested by Miller (1999), it is suitable for dealing with tasks with a low level of uncertainty. In practice, there are quite a number of forms of written communication. They include but not limited to, written orders, reports, bulletin boards, letters, or emails. In the shipping industry, written communication is also important for shore-ship interaction. The communication modes mainly include email, telex or fax. In general, written communications are often used for non-emergency issues such as the allocation of routine tasks and work reports. Cost can be a factor when considering the use of different modes. Principally, the use of written communication is prioritised in consideration of its cheaper cost as opposed to telephone communication. More significantly, written communication is usually documented, which provides both evidence of communication and often the possibility of later retrieval.

[ii] GMDSS is an internationally agreed set of safety procedures, communication protocols and equipment used for distress, emergency, safety and routine communication in the maritime industry (Wikipedia, 2011).

[iii] MF: the ITU 300 KHz – 3000 KHz radio frequency range
HF: the ITU 3–30 MHz radio frequency range
VHF: the ITU 30 MHz – 300 MHz radio frequency range

The description and discussion in this section help readers understand the main features of different means of communication, particularly those used in the shipping industry. They are the *platforms* of shore-ship communication this study aims to illuminate.

2.5 MANAGEMENT-EMPLOYEE COMMUNICATION

In Chapter 1, it was explained that the central focus of this thesis is communication between management and employees and its role in the delivery of OHSM – which themselves are situated within the employment relationship. Thus, the role of both management and employees in communicating OHS-related issues shall be examined respectively. In order to avoid ambiguity, the meaning of communication in this study will be defined prior to the examination. At the end of this section, implications for this study will be discussed based on the literature review.

2.5.1 Defining Communication in This Study

C*ommunication* has a wide range of definitions in different disciplines and contexts. Organisations are basically all about communication (Pace and Faules, 1994). Although the importance of communication between the management and employees was justified, there is a need to define '*what*' to communicate between them and '*for what purpose*' the communication is made in relation to OHSM. An examination of the respective responsibilities and obligations for OHSM participants can shed some light on the identification of the major aspects of communication between them.

For a company's management, OHS policies, information, instructions and orders have to be communicated to all areas of a company (Hutter, 2001). Authors such as Zwetsloot (2000), Dwyer (1991) and Hutter (2001) identified management's 'work support' and 'workplace control' are the two major purposes of downward communication with employees. Employers' responsibilities and obligations as stated in various OHS standards such as Occupational Health and Safety Assessment Series (OHSAS) 18001, and the European Union (EU) Framework Directive 89/391 imply a similar importance of communication with employees with regards to the delivery of aims and objectives of OHSM. For example, in the Framework Directive, the organisation's obligation to give support to employees is particularly addressed in Article 6.1, 6.2.h and 9.1.b, while the control of workplace hazards and risks is stated in Article 6.2.i, 6.3.b and 6.3.d [see European Economic Community (EEC), 1989]. Essentially, they were achieved by

communication between management and employees. In the international shipping industry, the case is also similar. According to the ISM Code, a shipping company needs to define 'lines of communication between and among shore and shipboard personnel (section 1.4.3, ISM Code) (IMO, 2002b). In section 3, a company's responsibility in shore to ship communication is clearly stated, i.e., 'the company is responsible for ensuring that shore-support and adequate resources are provided' (ibid). Moreover, for shore departments in charge of ship's safety management, a 'communication link' to ships was required to be established in order to 'monitor the safety and pollution-prevention aspects of the operation of each ship' (section 4, ISM Code) (ibid). In terms of its relevance to this study, the Chinese regulatory context in implementing these requirements will be introduced in section 2.7.1 in detail.

For company employees, safety related reporting and participation are an integral part of a rigorous safety management system [Health and Safety Executive (HSE), 2000]. The major purposes of employee upward communication are making 'safety reporting' and 'being consulted', which is of great value for 'proactive remedies', 'organisational learning', 'continuous improvement' as well as 'increased safety' (Psarros *et al.*, 2010; Oltedal and Wadsworth, 2010; Oltedal and McArthur, 2011). Acknowledgement of such importance could be seen in regulation such as in the EU Framework Directive. Article 13.d deals with workers obligation in 'safety reporting', while Article 6 specifically addresses 'workers consultation and participation' (see EEC, 1989). The ISM Code clearly states that a company should establish procedures to 'ensure that non-conformities, accidents and hazardous situations are reported to the Company' by seafarers (section 9.1, ISM Code) (IMO, 2002b). Furthermore, a company should also consult ship masters and other crew for the purpose of 'reviewing the safety management system and reporting its deficiencies to the shore-based management' (section 5.1.5, ISM Code) (ibid).

The identification of the major aspects of communication between management and employees helps to limit this study to specific areas. It avoids broad and ambiguous interpretations of the terms of communication and makes this study practicable. The major purposes of communication between the two domains are elaborated in the following sub-sections.

2.5.2 The Role of Management in Downward Communication

It is widely recognised that the responsibility for ensuring organisational OHSM rests primarily with the management in an organisation. Gunningham (2007, p.13) states that 'the management systems can only be effective when implemented with genuine commitment on the part of management'. Zwetsloot (2000) and Hutter (2001) stress the importance of strong management commitment in order to maintain routine OHS activities. When the management takes responsibility for creating a health and safety environment, it helps to create a positive workplace atmosphere (HSE, 1997). No matter whether it is about management's responsibility or commitment, organisational support and management control lie at the centre as a prerequisite for operationalisation of OHSM systems, as outlined in the following.

Organisational Support

One of the major purposes of management-employee communication is to deliver organisational support to employees in their workplaces. Employers have a duty of care in order to protect the OHS of their employees (Frick *et al.*, 2000; Guthrie and Waldeck, 2008, p.31).

Organisational support theory was developed by Eisenberger *et al.* (1986) in 1980s. Communication for organisational support is needed when a wide range of issues/problems emerge in workplaces. In a broad sense, such a communication involves hardware, software and 'liveware' – the three key dimensions of a work environment in an organisation (Wiener and Nagel, 1988). In practical terms, the communication for the provision of technical, informational and material resource support is essential for maintaining the normal operation of an OHSMS. Such communication makes particular sense in the context of shipping where shore management and crew are separated from each other. Given the importance of such communication for organisational support that underpins the operation of a management system, some basic antecedents were identified by Rhoades and Eisenberger (2002, p.712), i.e., fairness and equal resource distribution, management's concern about employees' contribution and organisational recognition of employees' endeavours in the given work conditions.

The organisational support theory can be explained by a reciprocity norm (Eisenberger *et al.*, 2001). Their argument is that 'when one person treats another well, the norm of reciprocity obliges the return of favourable treatment' (Gouldner, 1960, cited in Eisenberger

et al., 2001, p.42). Equally, it could apply to the relationship between management and employees. It predicates that if employees are treated fairly, they might be motivated to repay their organisation with better performance. The reciprocal exchange relationship reflects mutual dependence and 'extends beyond a formal contract' (Allen *et al.*, 2008, p.556). It also implies that the outcome of communication between management and employee could go beyond the rigid contract terms which bind their work relationship.

Based on the 'reciprocity norm', the consequences of communication between management and employee were that employees who perceive a high level of organisational support are obliged to perform in a way conducive to their organisation. Popma (2009) noted the assumed outcome of organisational support is the prevention of work-related harm such as workplace accidents or occupational diseases. Adequate communication for organisational support could improve employees' safety performance and active participation and reduction of their withdrawal behaviours (Rhoades and Eisenberger, 2002, p.712). A general survey in the UK offshore oil and gas industry showed that high levels of support from management may be returned with 'unanticipated benefits' from employees, and 'increased safety citizenship behaviour' (Mearns and Reader, 2008, p.388). Riggle *et al.*'s research findings (2009, p.1027) also showed that organisational support can have a strong negative effect on intentions to leave. Ferris *et al.* (2009) pointed out that it helps reduce organisational deviance. Thus, the review of the literature showed that the communication for organisational support is essential for the smooth functioning of any OHSMS.

Although much of the literature showed that communication for organisational support between management and employee showed positive effects on OHSM, variations of different levels of support and employees performance were also observed. Some found it did not necessarily lead to positive OHSM consequences (see Riggle *et al.*, 2009). In a general sense, organisational support is high if employees feel that decisions are fair and that their opinions are valued by their leaders. As a consequence, their contributions will be recognised and appreciated (Parsons *et al.*, 2011).

To sum up, previous studies on organisational support showed a variety of consequences (Valentine *et al.*, 2006). Some researchers identified strong positive relationships between the level of support and the expected employee outcomes; others found their relationship was weak. Above all, it is certain that the absence of organisational support seldom leads to

positive outcomes. The lack of support functions in modern management puts more responsibilities and pressures on individual employees (Bennett and Foster, 2007). The review of literature on organisational support helps explain and evaluate the effectiveness of organisational support in this study. It suggests that an organisation should invest in communication, one consequence of which it is to better motivate employees and subsequently achieve more positive outcomes in OHSM.

Management Control

As illustrated in section 2.5.1, one of the main purposes of management-employee communication is the execution of management control. Management control is one of the substantial aspects of organisational management. In the wide literature, a series of major disasters in 1970s and 1980s such as the *Seveso* chemical accident in Italy (1976), the *Three Mile Island* accident in the US (1979), the sinking of *Herald of Free Enterprise* (1987), and the *Piper Alpha* disaster in the UK (1988) highlighted the role of management control in safety (Cox and Cox, 1996). Simons (1995) defines management control as 'formal, information-based routines and procedures managers use to maintain or alter patterns in organisational activities.' Skoog (2007, p.42) finds this definition too broad, and suggests it be defined as 'a process of understanding, communicating and encouraging action in accordance with the value creation of the firm'. These definitions help us understand the processes and issues involved in management control. The practices of management control in organisational contexts are examined in the following paragraphs.

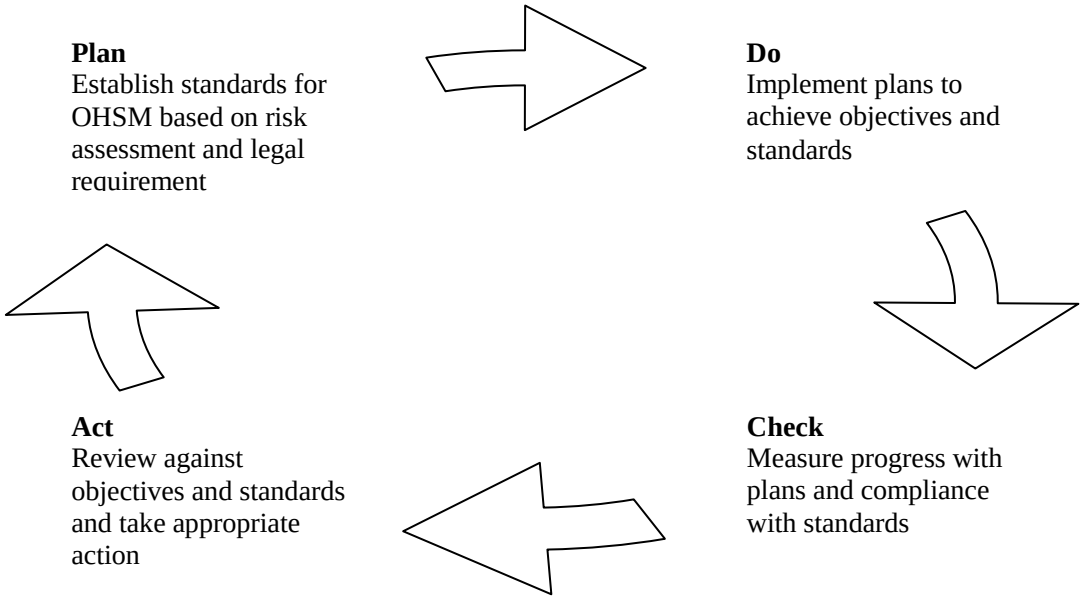
As mentioned in Chapter 1, over the past decades, more and more organisations have adopted a system based approach to OHSM. In the literature the management system itself serves as a tool of management control. It is a fact that many OHSMSs were established on the principles of International Organisation for Standardisation (ISO) 9000 series. Zwetsloot (2000, p.407) regards the ISO series as a 'power-force tool' to control workers. Nichols and Tucker found (2000, p.306) that there was a sense among managers and workers that 'OHSM systems are used by management to assert more control over plant-level OHS, to the detriment of worker rights and to gain the moral high ground by shifting the blame onto workers while portraying themselves as committed to continuous improvement, and ultimately, the prevention of all accidents'. The consequence was that employees were obliged to do certain things rather than others (Dwyer, 1991; Walters and Frick, 2000). A situation could go more extreme in work environments where workers

autonomy was limited. Gunningham and Johnstone (1999) suggest that such systems may bind employees to pay more attention to their own duties, undergo management surveillance and comply with various complicated reporting requirements.

In general, the management control over OHS is characterised by the control over the process of work across a hierarchy in an organisation. Basically, management control is organised into a hierarchy of dedicated roles underpinned by allocating authority to positions in the hierarchy (Walton, 2003). In some industries and work organisations this was rooted in Taylorist approaches to 'scientific management' and has long influenced both management practice and the reactive strategies of the labour movement (ibid, p.116). The role of management control was highlighted by Zwetsloot (2000), since control of work process is usually achieved by communication across the hierarchy and it generates results. It directly affects workplace health and safety. This was agreed by HSE (1997) which claimed that a majority of accidents and incidents were not caused by careless workers, but by failures in process control. In routine practice, management control over OHS is achieved by specific measures. HSE (1997, p.59) noted some of the typical measures that were widely used by management: regular health and safety tours, random observation, periodic surveys, regular inspection, and open discussions etc. Among them, the role of regular internal inspection is particularly highlighted in OHSM literature. Workplace risks are not easily managed by external OHS officers for a company; therefore, the emphasis on an internal health and safety management is reasonable and understandable (Dorman, 2000). The process of internal inspection is an occasion of mutual interaction (communication) for monitoring non-compliance (Ayres and Braithwaite, 1992). The basic assumption behind it is that if the process is well controlled, the result should be satisfactory. In order to ensure that the outcome of the process control can be reviewed, a monitoring system has to be in place. It provides a feedback mechanism to ensure that when OHSM approaches are reviewed, information about the outcomes of workplace OHSM are accessible for the management. A key element of monitoring is the communication of its results so that responsive actions may be taken. In principle, the communication process can be explained by the classic Deming Cycle of 'plan, do, check, and act' (HSE, 1997, p.14; Gallagher *et al.*, 2003, p.68; Frick and Zwetsloot, 2007). It is illustrated and interpreted in Figure 1.

The review of the literature raised several further issues which are worth elaboration with regard to the execution of management control. First, the system based approach to OHSM

Figure 1: Communication Process on Plan-Do-Check-Act for Health and Safety



Source: HSE (1997, p.14)

as a tool of management control showed that the impact of management systems on employee's OHS was considerable. It was criticised as paying special intention to 'safe people' and 'workers behaviour', rather than creating a 'safe place' or 'safe environment', leading to a skewed focus on a behavioural-oriented approach (Frick and Wren, 2000; Wokutch and VanSandt, 2000; Gunningham and Jonestone, 2000). It is argued that such an approach shifts away from real industrial problems: 'the unsafe and unhealthy working conditions' (Wokutch and VanSandt, 2000, p.373). Particular criticisms were made by (Shaw and Blewett, 2000):

> [They] do not seek to change relations in the workplace and risk merely replacing the myth of the careless worker with the myth of the safety management system. This has little effect on OHS and the experience of the workforce…A narrowly conceived safety management systems approach also risks reinforcing the individualisation of risk, because it creates the illusion of control – that the only way an injury or disease could occur is if an individual does not follow the current procedures (ibid, p.462-463).

A study by Nichols and Tucker (2000) in the UK and Canada showed that the OHSMSs tended to focus on worker behaviour as a primary cause of accidents, to suppress injury reporting and to ignore trade unions. They questioned the abstract argument that 'OHSMSs are a good thing' for lack of clear evidence in the effectiveness of OHSMSs (ibid, p.307). Although the behavioural oriented approach was often criticised, it was found that this

approach worked well in DuPont (Wokutch and VanSandt, 2000), which might be explained by 'contextual specific theories' (Kamp and Blansch, 2000; Quinlan and Mayhew, 2000; Bennett and Foster, 2007).

Second, the system based management control can lead to an imbalance of power in an organisation (Pfeffer, 1992). Dorman (2000) conducted research on the question 'if safety pays, why do employers not invest in it,' and the result shows that health and safety debates are about power and control. Giddens (1984) pointed out that in a broad sense, power can be related to the ability to get things done, i.e. create activity. In a narrow sense, power is simply domination through an organisational hierarchy. Bellaby (1999) found that asymmetrical power relations arise when workers work in an unsafe condition which is created by their employer. Due to this power asymmetry, workers become powerless bodies. As a result, they tend to be vulnerable to work related health and safety problems.

Third, in order to ensure that aims and objectives of OHSM are achieved, some kind of incentive or discipline needs to be in place to ensure that the strictures of the management are followed. Considerations of these measures in management control processes are advocated by scholars such as Dwyer (1991) and Podsakoff *et al.* (2006). The positive role of adopting incentive measures in OHSM has been confirmed in studies by authors such as Eakin *et al.* (2000), Wokutch and VanSandt (2000) and Robson *et al.* (2007). Gouldner (1957) in his study on 'punishment centred bureaucracy' suggests that discipline is indeed a routine tool in organisations (cited in Dwyer, 1991). The assumption under McGregor's XY theory model (1960) was that most employees must be controlled with punishment so that they will contribute to organisational objectives, even though punishment constitutes the last available resource in dealing with non-compliance (Dwyer 1991; Hutter, 2001). Therefore, vacillation between the carrot of financial rewards and stick of authoritarianism is needed for management control (see Dwyer, 1991). Particularly, the proper use of economic punishment, or discipline, is emphasised in the current literature.

This part of literature discussed the communication process of management control and several issues involved the process. In practice, management control is achieved through various OHSM measures, and the outcomes of management control are communicated to management and used for periodic review to continuously improve the management system. Quinlan and Mayhew (2000) argue that the management control in an organisation is a

pre-requisite for effective OHSM. But, it makes fundamental differences in terms of what kind of control it exerts. The review of the literature implies that the management control, in essence, is about the control of workers and workplace OHSM. It can have direct impact on the outcome of organisational OHSM. The Behavioural controls, rather than the control of safe working environment, may lead to negative consequences, which discourage 'experimentation' as a key means for innovation as well as 'organisational learning' (Zwetsloot, 2000). In addition, the literature identified that management control can lead to the imbalance of power between the management and employees in an organisation. Also, it showed a certain positive role in the application of some incentive or discipline measures in the process of management control. The review of the literature on the role of management control helps to explain the effect of downward (shore to ship) communication in this study.

2.5.3 The Role of Employees in Upward Communication

Having discussed the role of management in downward communication, this sub-section will explore the role of employees in upward communication. In general, employees can provide critical inputs into OHSM (Dwyer, 2000). Empirical results in the literature show that when OHS arrangements do not involve employees and their representatives, OHS outcomes are poorer than when they do (Nichols, 1997). This point was further reinforced in ten case studies from the UK construction and chemicals industries conducted by Walters and Nichols (2007). Employees can be supportive by their active involvement in organisational decision making processes by contributing their knowledge and experience. As discussed in section 2.5.1, employee's upward communication is mainly for 'safety reporting' and 'being consulted', which allows them to participate in organisational OHSM activities.

Safety Reporting

The argument in section 2.5.1 noted that it is essential that procedures for employee's safety reporting should be established so that upward communication can be guaranteed. In general, smooth functioning of an upward communication system is underpinned by an effective communication culture (Havold, 2000; Graham *et al.*, 2002). Also, it is a precondition of successful OHSM and one of the key features of a high reliability organisation (Reason, 1997; HSE, 2000; Kuhn and Youngberg, 2002). This sub-section reviews and discusses the literature on workplace safety reporting that dominates upward

communication process in an OHSMS.

Usually, safety reporting is conducted based on a management system and this has implications for the outcome of OHSM. First, the design of reporting procedures is crucial. If it was designed improperly, it would present a distorted view of the extent of non-compliance or violation (Nichols, 1997). Second, a reporting system is likely to break down in the absence of feedback. Therefore, feedback mechanisms must be built into it both to promote the morale of a reporter and facilitate problem solving. Third and commonly, a safety report is 'the key trigger for a thorough-going incident investigation' (Hopkins, 2000, p.58). The reporting may lead to a root cause analysis so that contributing factors can be identified. Fourth, in order to ensure a reporting system works properly, confidentiality or immunity from responsibilities is needed to prevent detriment to a reporter (ibid). Examples in US aviation industry showed significant influences in terms of whether immunity from prosecution to pilots was given or not (see Hopkins, 2000). The four points identified in the literature are essential for the operationalisation of any reporting systems. They help us to understand and explain the effectiveness and efficiency of reporting system practices.

In the context of shipping, section 2.5.1 mentions that safety reporting mainly includes 'non-conformities, accidents and hazardous situations'. Non-conformity is defined as 'an observed situation where objective evidence indicates the non-fulfilment of a specified requirement (IMO, 2002b). An accident is defined as an occurrence involving personal injury or casualty, damage to property, environment, a ship or its cargo (Anderson, 2003); while a hazardous situation is defined as a sequence of events and/or conditions that could have resulted in loss (ibid). All of these should be reported to shore management by crew onboard ships. Furthermore, they should be 'investigated and analysed with the objective of improving safety and pollution prevention' (section 9.1, ISM Code) (IMO, 2002b).

One of the major research findings from many industries showed that 'under-reporting' of safety-related events was omnipresent (Oltedal and McArthur, 2011). The analysis of the Piper Alpha accident from the British offshore oil and gas industry showed that the safety reporting system itself was incoherent. A reporter could mean a whistleblower, and failures to follow reporting procedures were endemic and normal (Wright, 1994). To a great extent, the problem of under-reporting is also echoed by the findings in the shipping industry given

the limited literature sources. For example, the ten year study (1997-2007) of maritime casualty/accident databases from the Lloyd's Register Fair Play (LRFP) and Norwegian Maritime Directorate (NMD) showed that more than sixty percent of the total accidents were under-reported (Psarros *et al.*, 2010). In general the literature suggested that under-reporting is a 'considerable problem' in this industry, and 'a culture of under-reporting' of safety related occurrences is prevalent (Nielsen and Roberts, 1999; IMO, 2008b; Ellis *et al.*, 2010; Bhattacharya, 2011). The under-reporting undermined normal and effective operations of the established safety management system, as was stated by Oltedal and McArthur (2011):

> A fundamental pillar of safety management is that information reported into the system is reliable and reflects the actual situation in working operations. Thus, under-reporting of safety related events constitutes a major threat to the efficiency and utility of a safety management system (ibid, p.331).

Although safety reporting is particularly important for the OHSM, the significant under-reporting problem can undermine the outcome of the OHSM. This study conducted in the Chinese chemical shipping industry provides further evidence of current safety reporting, the factors that influence this reporting and its effects on OHSM practice in the shipping industry.

Employee Consultation

Apart from safety reporting, employee consultation is another important component of an effective OHSMS. Employee Consultation is a key term embracing OHSM-related activities (Walters and Nichols, 2007). In the UK and many other countries, every employer has a duty to consult employees and their health and safety representatives. Employers should provide adequate information, listen to what employees and their representatives have to say on health and safety issues and respond (ibid, p.18). Employees or their representatives should be consulted in advance by management with regard to the arrangements of certain significant health and safety related activities (Walters and Jensen, 2000; Akerlind *et al.*, 2007). Kamp and Blansch (2000, p.419) argue that employees should have opportunities to 'present their views and experiences, ideas and criticisms, and must receive feedback from management'. It is impossible to imagine a company 'with adequate safety and health standards but without any real say of the workers in OHSM' (Zwetsloot, 2000, p.406). In general, employee consultation ensures their 'right to know' in relation to OHSM (Walters and Frick, 2000). It is achieved through their communication with management so as to enable participation in the decision making process of OHSM.

Employee consultation is regarded as a bottom-up strategy for organisational change (Shaw and Blewett, 2000). It can also promote co-operation between management and employee to ensure the health and safety at work of the employees (Walters and Nichols, 2007).

Employee consultation can be achieved in many ways. The literature suggests that there are diverse forms of employee consultation in relation to the OHSM (Walters and Frick, 2000). In many cases, employee consultations are prioritised when there is a recognised trade union. Usually, it is conducted by communication with the representatives of that union. The role of trade unions in OHSM in upward communication is further examined in the next section. However, in situations where there is no trade union recognised for collective bargaining purposes, employee consultations can be achieved by direct communication with employees or groups of them (Walters, and Nichols, 2007).

Given the positive role of effective employee consultations, the research also shows that sometimes employees are instructed to act rather than consulted and encouraged to participate in any meaningful way' (Gunningham and Johnstone, 2000, p.145). Bornstein and Hart (2010) identified the 'ambiguous' role of employee consultation for enhancing OHSM outcomes in situations of reduced external regulatory oversight. They argued that, given employees' accredited participatory role, it might only produce an appearance of effectiveness; in reality the ability of employees or their representatives to raise controversial issues was inhibited. In contrast with the land based situation, research and information on employee consultation in the shipping industry is far more limited. This is true globally and especially so in China where the research is very limited on the nature or level of employee consultation in the Chinese shipping industry. This study makes a contribution to the assessment of the level of employee consultation in this industry in the Chinese context.

In section 2.5.2, some common measures used for management control were illustrated. Meanwhile, the application of those measures can be interwoven with employee reporting and consultation. Through examining employee practices of safety reporting and consultation (in this study it is the ship's crew), factors influencing upward communication are identified. Also, the influences of upward communication on the consequences of OHSM are also explored.

2.5.4 The Role of Trade Unions

The role of employee consultation was just discussed. Employee consultation cannot function effectively in the absence of support from 'organised labour' (Walters, 2005). In essence, a trade union serves this purpose. Frick *et al.* (2000) said trade unions are 'essential' to guarantee certain level of genuine worker participation. They are regarded as the 'only developed possibility for the support of worker autonomy', without which it would be hard to regulate management performance and achieve effective OHSM (Walters and Frick, 2000, p.65). Dwyer (1991) saw trade unions as a means of combating authoritarianism. Quinlan and Mayhew (2000) recognised that trade unions made an important contribution to maintaining OHS standards in many developed nations. Popma (2009) found that trade unions' involvement can help the development of risk assessment tools.

In general, the role of trade unions has been regarded as the most powerful countervailing force to confront short-term profit, bureaucratism and poor OHSM in most western literature (Gunningham and Johnstone, 1999). The evidence also shows that OHSM is more successful when workers are represented and unions provide autonomous representation and support for it (Walters and Nichols, 2007). However, the research in the international shipping industry showed that this industry suffers from lack of trade union support at the shipboard level and at the level of collective bargaining with employers (Sampson and Thomas, 2003; Kahveci and Nichols, 2006; Bhattacharya, 2012).

In China, the role of trade unions shows significant variation from their western counterparts. The All China Federation of Trade Unions (ACFTU) in China is the largest trade union in the world. The statistics released by *The People's Daily* (1 May 2011), one of the main official public media in China, showed that the total membership in trade unions reached 239 million. According to Chen (2009), the ACFTU has a formal government status. Qiao (2010) noted that the ACFTU is operating under the national umbrella and only acting as an apparatus to align labour demands with national interests. However, Taylor (2003) argued it is hardly a workers organisation given the fact of its minimal role in worker representation and labour relations adjustments. In general, Qiao (2010, p.29) identified that 'almost none of the industrial actions in contemporary China is initiated or organised by the Chinese trade unions'.

At the organisational level, a trade union is formally part of the ACFTU. Its major role is to assist its affiliated organisation to facilitate production output as well as OHSM. Additionally, it is committed to assisting management to provide collective welfare services for workers, organising spare-time cultural or technical activities for them such as professional training and recreational services. Given its active influences on workers, fundamental problems are also identified in the literature. A trade union in China is subordinated to organisational management. Its assumed power is not derived from organised labour (Chen, 2009). Independent unions are not allowed to be organised freely at workers' will (Ding *et al.*, 2002). This structural arrangement 'creates a formidable obstacle to their representative function…If they (unions) are seen to be at odds with management and seek to redress abuses, they could face retaliation and harassment from the enterprise' (Chen, 2003a, p.1017). The empirical study made by Ding *et al.* (2002) showed that unions in state-owned enterprises are more influential than in other kinds of firms. It was found that in many non-state enterprises, the union's role is even more limited and some did not even have a union organisation. Based on the analysis of the data set originating from a national survey in the Chinese manufacturing industry carried out by ACFTU, Chen and Chan (2004) found that the input of trade unions does have a positive impact on the protection of the workers' OHS. However, their conclusions were based on a large volume of statistical data with questionable reliability. Further, their study lacks qualitative engagement with the organisational context. In this sense their study failed to produce convincing evidence for their findings.

The above mentioned organisation of trade unions applies in the Chinese shipping industry. Under this background, the worker's upward communication can be mediated by the 'specific' role of trade unions in China. The review of literature on the role of trade unions and its relations to OHSM in western world as well as in China can help us understand the role of a trade union in upward communication in improving OHSM practice onboard ships in the Chinese context. They will be further addressed in the data and discussion chapters of this thesis.

2.5.5 Implications for the Study (I)

The main focus of this study is an analysis of the communication between shore management and ship's crew in the Chinese chemical shipping industry. In the beginning of section 2.5, it was stated that the meaning of *communication* is broad and there is a need to

define what is communicated between these parties in terms of the specific research area. The wide definition of communication is used based on findings in the literature. Relevant OHSM issues in relation to both downward management communication and upward employee communication have been examined. The responsibilities and obligations of both management and employee identified the key subjects of communication between them in relation to OHSM.

The role of management in downward communication was examined first. From the management perspective, the analysis of the literature identified two purposes for management's downward communication with employees, i.e., communication for organisational support and communication for management control. In the context of shipping it raises a question about the relationship between management's support and control roles in communications between shore and ships. An answer to this general question can be illuminated by examining answers to the following detailed questions:

1) How effective is shore to ship communication for organisational support?

2) How effective is shore to ship communication for management control?

3) In which way does shore to ship communication influence shipboard OHSM in both situations?

In a comparable sense this time from the employees' perspective, two purposes of communication were identified, i.e., communication for safety reporting and employee consultation on OHSM-related issues. This leads to a question about how safety reporting and employee consultation can be affected in practice. For the latter, in consideration of the wide coverage of employee consultation on OHSM-related issues and in order to narrow down the topic in this study, the examination of employee consultation was achieved by focusing on crew's safety suggestions for the improvement of shipboard OHSM in response to company's safety policy. The examination also includes the role of shipboard trade union units in improving OHSM. Thus, the detailed research questions in relation to this subject matter are:

4) How effective is ship to shore communication for safety reporting?

5) How effective is ship to shore communication for safety suggestions?

6) What are the immediate factors affecting ship to shore communication in both situations?

Since communication involves two parties, both management and crew's perspectives are examined. Moreover, the study also addresses the role of shore-ship communication as a whole in relation to OHSM. Thus, the study further examines:
7) What are the underlying factors affecting shore-ship communication?

As stated, this main research question was shaped within the framework of OHSM. The study will also lead to a general assessment on how OHSM can be affected as a consequence of shore-ship communication. Thus, there is a need to review OHSM-related literature and discuss its findings in relation to the shipping industry in general and its unique situation in China.

2.6 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT IN THE CONTEXT OF SHIPPING

As stated in Chapter 1, this study explores how communication affects OHSM in two Chinese chemical shipping companies. It is therefore important to know the development and current practices of OHSM in the shipping industry. This section includes a brief overview on the OHSM strategy applied in the international shipping industry, a comparative assessment of the ISM Code, and a brief introduction to major aspects of OHSMSs that are relevant to this study. Finally implications of the literature discussion for this study will be presented.

2.6.1 OHSM Strategy in the Shipping and Its Relevance with Communication

The shipping industry had been self-regulating for a long time. By tradition, ships were subject to the laws, rules and regulations of their own flag states and in the countries where they sailed in the past. There was a lack of multilateral harmonisation and uniform standards. The regulation of the maritime world was very late (Perrow, 1999). Although the IMO adopted a considerable number of legal instruments intended to improve maritime safety, the major focus lay on the technical issues rather than human factors.

It was widely acknowledged that *the Herald of Free Enterprise* accident catalysed the move towards a systematic OHSM strategy in the international shipping industry. In 1987, the capsizing of a UK registered passenger ferry in the English Channel, *the Herald of Free Enterprise*, ironically caused a loss of almost two hundred lives. Although the immediate causes of the accident were errors on the part of ship's officers and crew, the in-depth

inquiry showed that the cardinal faults lay in the shore management of the company (see Reason, 2005, p.58). The accident investigation team examined the shore-ship communication process and found that one of the major problems pointed to serious lapses by the shore-based management (HMSO, 1987). Based on that analysis, Goulielmos and Goulielmos (2005, p.490) concluded that 'long established mis-communication patterns and problematic misconceived dialogues between management and ship officers did not allow for an adaptation to changing parameters'. This was seen as a major characteristic of 'organisational decline' and 'closed systems' (ibid). These studies highlighted the unique role of shore-ship communication in OHSM in the shipping context.

The sinking of the ship and follow-up investigation result raised noticeable concerns in the international maritime community following the accident. It directly led to the introduction of the ISM Code in 1998 and marked a 'turning point' for the industry. Before the introduction of the Code, there had been some positive developments on regulating OHSM through a system based approach in the shipping industry from developed countries such as UK as well as from international industrial bodies such as the International Chamber of Shipping/International Shipping Federation (ICS/ISF); however, they were not well organised lacking an international influence.

The introduction of the Code marked a 'turning point' for the industry. It brought about a fundamental change to the way in which OHSM was previously conducted (Anderson, 2003). The IMO, a specialised agency of the United Nations (UN), required every contracting member to implement the Code by enacting corresponding mandatory standards to regulate OHSM in its shipping industry (IMO, 20007). The philosophy underpinning the Code is to require shipping managers and seafarers to transform their traditional operational practice into a regulated system-based approach in order to better manage OHS issues and reduce harm to persons, ships and the environment (Anderson, 2003; Bailey, 2006). All shipping companies around the world subject to the Code were required to establish mandated forms of safety management systems. According to the Code, an OHSMS should consist of some essential elements contained in the Code. The overall functional requirements of the system are:

> 'a safety and environmental protection policy, instructions and procedures to ensure safe operation of ships and protection of the environment in compliance with relevant international and flag state legislation, defined levels of authority and lines of *communication* between, and amongst, shore and shipboard personnel, procedures for reporting accidents and non conformities with the provisions of this

> Code, procedures to prepare for and respond to emergency situations; and procedures for internal audits and management reviews' (IMO, 2007, p.4).

On the one hand, these requirements imply the importance of lines of communication between different hierarchies in a shipping organisation for OHSM practice. In section 2.5, I addressed the role of management-employee communication in OHSM. In the context of shipping shore-ship communication plays an essential role in the operation of a management system. These requirements suggest the importance of establishing a sound OHSMS. Although a good management system is said to be a competitive advantage, the real effect can be complex in terms of the nature of this multinational and multifaceted industry employing a globalised labour force (Anderson, 2003). After the implementation of the Code, some authors have claimed its positive role in improving OHSM in the international shipping industry (IMO, 2005; Celik, 2009), but there is a lack of firm evidence from empirical studies to support their views. Given the very limited sources available in the maritime literature (as stated in Chapter 1) previous studies on the safety management in the maritime industry were mainly conducted in questionnaire-based surveys (Anderson, 2003; IMO, 2005). They 'failed to expose the underlying concerns' and 'reach any firm conclusion', and 'further in-depth qualitative research' was recommended (Bhattacharya, 2009, p.4).

As a contracting member of the IMO, China was obliged to implement the mandated international standards enacted by the IMO. The Ministry of Communications and the China Maritime Safety Administration (MSA), its affiliated official department dedicated to maritime affairs in China, are responsible for ensuring the adequate implementation of the Code. Circular 96 (465) was the first official document requiring maritime organisations involved to fully comply with the Code. Following the implementation of the ISM Code, the National Safety Management (NSM) Code was enacted by the Ministry of Communications in 2001. Since then, fundamental changes have been made in the Chinese shipping industry. As stated, one of the most significant impacts on a shipping company is the establishment of a safety management system. The search of two major Chinese databases, the CNKI and CQVIP, showed that the articles available about the implementation of the ISM Code mainly addressed theoretical or technical issues integrated with personal views and suggestions. The lack of empirical studies is evident in terms of operationalisation of OHSMSs in the Chinese context. Thus, few previous empirical studies along with the different national situation also suggest the need for ongoing studies in this

industry.

2.6.2 A Comparative Assessment of the ISM Code

The ISM Code is a late comer to the already established tradition of movement towards OHSM in regulation of OHS in different parts of the world. In particular it followed the practice of regulated self-regulation (Gunningham and Johnstone, 1999; Bruhn, 2010, p.11) or enforced self-regulation (Ayres and Braithwaite, 1992, p.101) to OHSM which have been identified in responses to the failures of self-regulation since 1970s. The *Safety Case* approach, first introduced in the UK in 1984, was such a prototype (Cullen, 1990; Gunningham and Johnstone, 1999; Hutter, 2001). At the supranational level a typical example is the adoption of the EU Framework Directive in 1989 (Gunningham, 2007). This approach encouraged the establishment of an 'inbuilt management system' (Gunningham and Johnstone, 1999, p.39). It is regarded as 'a central strategy' to cope with poor workplace health and safety issues (Frick and Wren, 2000).

In essence the introduction of the ISM Code is nothing particularly unique. It shares the features of many of the regulatory standards for OHSM, particularly of those in western world countries. The development of the ISM Code incorporated major elements originating from the ICS/ISF voluntary guidelines on ship safety management, the UK Merchant Shipping Guidance Notes M.1188, and ISO standards for quality management (Bhattacharya, 2009). In consideration of their relevance to this study, the role of employers and employees in relation to general regulatory requirements and those included in the ISM Code are addressed next.

It is widely accepted in many regulatory standards that responsibility for ensuring OHS rests primarily with employers. It extends to all types of workplaces and work activities. In most regulatory standards the employers' obligation to provide a safe working environment for their employees has been unanimously confirmed (Zwetsloot, 2000; Hutter, 2001). If employers take full responsibility for creating a healthy and safe environment, it helps in the creation of a positive workplace atmosphere (HSE, 1997).

Meanwhile, the competence of employers in the delivery of OHSM was also highlighted. The effectiveness in implementing OHSM can be compromised by employers' tardy compliance and their limited ability in managing OHS (Frick and Wren, 2000; Frick *et al.*,

2000; Hutter, 2001). In the ISM Code the role of a Company in OHSM was particularly addressed (the Company was defined as 'the owner of the ship or any other organisation or person such as the manager, or the bareboat charterer, who has assumed the responsibility for operation of the ship from the shipowner') (IMO, 2002b). The Company should 'provide for safety practices in ship operation and safety working environment'; 'establish safeguards against all identified risks'; and 'continuously improve safety management skills of personnel ashore and aboard ships' (ibid). It can be seen from the quoted text of the Code that the importance of the responsibility of employers for health and safety management in the shipping context was unequivocally stated. Their responsibility for shipboard OHSM would be delivered via communication with the crew. This point will also be examined later in this study. In addition, according to the Code, a company's safety management practice is subject to regular audit/inspection conducted by the maritime administration of each country. If a company failed to meet the OHSM standards as required by both the Code and the national regulatory requirements, the company will bear corresponding legal responsibilities and could face penalties or even suspension of the Document of Compliance issued by its administration.

The role of employees in OSHM has been widely discussed in examinations of various regulatory schemes. In particular the role of worker participation in the process of OHSM was considered essential in a participative management approach. Wagner (1994) interpreted such participation in decision making as a process of sharing influence among people in different hierarchical positions. Some empirical studies have shown that participative decision making can improve an employee's job satisfaction and mental health (Schwarz, 1989; Lam *et al.*, 2002) even though such a relation might be nonlinear and dependent on situations and individuals (Cotton, 1995). Worker participation has been prescribed in national regulations in EU countries, Canada and Australia. In the UK, the Health and Safety at Work Act (1974), the Safety Representatives and Safety Committees Regulations (1977), and the Health and Safety (Consultation with Employees) Regulations (1996) have clearly elaborated the role of employees. Worker participation is also assured in certain mandatory forms of OHSMSs, for example, that required by the EU Framework Directive. It is a 'legal requirement' for all employees in EU countries to participate – not just be informed about – in workplace OHSM issues that affect them (HSE, 1997). The ultimate aim is to create a 'receptive culture' in OHSM (Walters and Frick, 2000). In terms of seafarer participation in the shipping context, the Code shows a significant gap in this

respect. The Code only specifies that the Company should ensure that 'each ship is manned with qualified seafarers', and that they should 'have an adequate understanding' of the management system, and 'communicate effectively' in relation to OHSM (IMO, 2002b). The text of the Code shows that it does not contain an element of employee involvement in OHSM specifically and explicitly. The Code limits the role of seafarers to merely adhering to various operational procedures set by the employer (Bhattacharya, 2009). It does not state the need for the involvement of seafarers in organisational decision making processes in relation to crew's OHS. Also, it does not mention any required features of health and safety representatives or safety committees (ibid, 2009).

Worker participation in the OHSM has a link to the notion of 'democratic dialogue' in society and the idea of 'workplace democracy' (Walters and Frick, 2000; Shaw and Blewett, 2000). The discussion of employee safety reporting and consultation in section 2.5.3 also highlight the need for worker participation. In general, worker participation can be categorised into two main forms: individual participation and participation by collective representatives (Walters and Frick, 2000). For the latter a trade union is one of the typical collective forms of worker participation. This point was addressed in section 2.5.4. Worker participation serves two purposes: to achieve the goals of the OHSM and, as well, to assure workers interests (ibid). The level of worker participation and influence is fundamental to the effects of OHSM (Frick *et al.*, 2000; Walters, 2004). Quinlan and Mayhew (2000, p.184) argue that most systematic approaches to OHSM require a higher level of employee's involvement and collaboration. Strong worker participation has beneficial consequences for work efficiency and workplace health and safety (Akerlind *et al.*, 2007). Also, it is a feature of enterprises with lower injury rates (Shaw and Blewett, 2000, p.662). Generally speaking, workers should be encouraged to fully participate in the process of OHSM. In contrast, the maritime industry places very little focus on the benefits of seafarers' participation (Bhattacharya, 2009 and 2012).

The limited literature review here shows that worker participation in Chinese factories is comparatively lower than those in their western counterparts. Brown (2007) identified some major factors that affect worker participation as a result of his study of Chinese factories:

a) Lack of political will and/or inadequate allocation of resources by executive management;
b) A command and control management approach that prohibits ceding any authority

and power to non-management employees;
c) Opposition from the government-controlled national union and management-led workplace unions;
d) Opposition from first-line supervisors and department managers due to their skewed concern of time lost and production speed as a result of OHS activities (ibid, p.256).

Although the findings were drawn from the study in factories, to a great extent, the analysis can apply to shipping companies given the identity of the Chinese social context and similarity of Chinese management philosophy. Sections 2.5.3 and 2.6.1 above noted that there was a lack of empirical studies on seafarer consultation and the outcome of the implementation of the ISM Code in the Chinese shipping industry. Despite the differences, the findings about worker participation levels in Chinese factories do shed some light on the level of seafarer participation in the Chinese shipping industry.

The discussion of the role of employers and employees in OHSM can help readers understand both downward and upward communication in relation to OHSM activities. A general assessment of the ISM Code showed some similar features in terms of the role of an organisation's management in OHSM, but there is a lack of clear-cut statements in terms of the role of employee involvement and participation in OHSM. The review of the literature in land-based industries addressed the importance of worker participation in management-employee communication (interaction). However, to date it remains uncertain how the features of the Code influence shore-ship communication as well as the outcome of shipboard OHSM. This study is an opportunity to examine the effectiveness of shore-to-ship communication as well as the level of seafarer participation in ship-to-shore communication in the Chinese shipping industry. The study can shed some light on the improvement of communication between shore management and ship’s crew for better OHSM following the implementation of the ISM Code.

2.6.3 System Based Approach to OHSM and Its Application in Shipping

Section 2.6.1 stated that a mandated form of management system shall be established in response to the requirement of the ISM Code. From the functional requirements of the management system as stated in the Code, it is not difficult to understand that the essence of the Code is to call for a system based approach to OHSM in the international shipping industry.

A system based approach to OHSM can be traced back as early as the 1920s in the Western

Electric Company in the US, and the later risk management systems in the1960s and 1970s (Bennett and Foster, 2007). Gunningham and Johnstone (1999) identified that OHSMSs were embedded in the generic management philosophy of Total Quality Management (TQM). This has developed since the1980s in which the management of OHS is one of TQM's major objectives. They also argued that a system based approach to OHSM can be defined as a safety management system in many circumstances. In essence, it is an integral part of an integrated TQM system, and a 'specific application of the generic TQM model' (Wokutch and VanSandt, 2000, p.370). Furthermore, Gunningham and Johnstone (1999) pointed out that some other modern management philosophies such as Quality Assurance (QA), Just-In-Time (JIT), Lean Production and Agile Production also contribute to the development of an OHSMS.

From Chapter 1 we have seen increasing adoption of OHSMSs across organisations, industries and countries since the 1980s. Even in countries where formal OHSMSs are not mandated by their OHS legislation, it is common that establishing and maintaining such a system is required by most jurisdictions (Nichols and Tucker, 2000). It is regarded as 'a central strategy to detect and abate workplace hazards, and reduce ill health at work' (Frick and Wren, 2000, p.17). Its adoption allows an organisation to go beyond compliance with minimum legal standards. This is seen as the 'promise' of an OHSMS. It 'encourages enterprises to do better than minimum standards through a combination of systematic management practice and high level commitment to a safety culture' (Gunningham and Johnstone, 2000, p.135). These descriptions give explanations for the requirement to have an OHSMS in place in a shipping company prescribed by the Code. In section 4.3, I will detail the basic information of the management systems established in the two companies selected for my study. However, there is a need to briefly review and discuss the major aspects of OHSMSs that have implications for my study of the Chinese shipping industry.

Irrespective of the differences between management systems, it is essential that a written statement of the OHSM policy should be given at the beginning of any OHSMS imitative. The word 'policy' here means 'the general intentions, approach and objectives – the vision – of an organisation and the criteria and principles upon which it bases its action' (HSE, 1997, p.6). It is mainly set up by top management, and should reflect the values/beliefs of the members who produce and implement it in an organisation (Tam *et al.*, 2004). An effective OHSM policy sets a clear direction for members to follow, and it is not about 'lip service'

given by management, but their 'genuine commitment to action' (HSE, 2000, p.6). The importance of OHSM policy is indubitable. Tam *et al.* (2004) argued that the policy affects organisational safety performance and OHSM practice. It is also one of the contributing causes of workplace incidents/accidents (Fang *et al.*, 2004). In general, the ultimate goal is to maintain specified OHSM standards and achieve expected outcomes.

An OHSM policy is brief, concise and abstract, and it is usually *reflected* by concrete OHSM objectives. In association with the objectives, OHS indicators were widely used in many shore-based industries for indicating and measuring whether the objectives were met or not (Cox and Cox, 1996; Buchanan and Huczynski, 1997; HSE, 2000; Wokutch and VanSandt; 2000; Balka and Freilich, 2008). In other words, OHS indicators are commonly used for measuring the effectiveness of an OHSMS. The use of indicators has been claimed to be effective in terms of their role in controlling negative events, since they are easily measured and serve as important evidence for rewards and penalties of employee's behaviours (Wokutch and VanSandt, 2000). Based on the indicators, it is easy to establish observable cause-effect relationship between unsafe practice and the negative events (ibid). Armstrong and Armstrong (2008) supported the use of indicators for OHSM, since they can provide valuable data for cross time and cross department comparisons of the effectiveness of OHSM issues, which lead to better forms of work organisation. Wadsworth and Smith (2009, p.21) stated that this practice can potentially 'raise the profile' of health and safety management for an organisation. Thus, it could be seen that OHS indicators reflect the extent to which an OHSM policy is achieved in practice.

In addition, the OHSM literature shows that one of the significant roles of an OHSMS is its function of continuous improvement (HSE, 1997, p.13). It means that the in-built internal management process within a system should lead to continuous improvement on OHS performance in response to emerging workplace health and safety problems. Many authors such as Shaw and Blewett (2000, p.468), Frick and Wren (2000, p.24), Guningham (2007, p.7) and Psarros *et al.* (2010) argued that the essential value of a management system is that the system is situated in a status of 'continuous improvement'. Gunningham and Johnstone (2000, p.144) supported the view that it has a potential of stimulating 'self-organisation' and 'self-regulation' of OHS activities, and can realise 'internal self-critical reflection and continuous improvement'. With reference to the management principles of OHSAS 18001, Bennett and Foster (2007, p.38) argued that an OHSMS, in essence, is a 'dynamic system'

rather than a ‘static one’. Thus, an organisation can be more responsive to the concerns of OHS issues (Gunningham, 2007).

While the positive role of continuous improvement for a management system was confirmed in the extant literature, it remains meaningful to examine how it works in reality and what are the outcomes. The examination in the international shipping industry showed that a similar pattern was followed in the development of an OHSMS. For example, OHS indicators have been commonly used by shipping companies for the measuring the achievement of OHSMSs (see section 4.3.1 and 4.3.2). Although the main focus of this study is shore-ship communication, it will eventually lead to a general assessment on the effectiveness of OHSM. This empirical study hopes to contribute by revealing the situation in the Chinese chemical shipping industry.

2.6.4 Implications for the Study (II)

Since this study examines not only shore-ship communication, but also how such communication influences shipboard OHSM in the Chinese chemical shipping industry, the review and discussion of the literature in this section serves the latter purpose. Apart from the research questions presented in section 2.5.5, some further questions are raised by the literature in this section.

OHSM strategies have evolved over centuries, and the regulation of the international shipping industry – the introduction of the ISM Code – was based on well-established traditions in regulating OHS in other land bases workplaces. The Code brought about a significant transformation of this industry. Given that the Code resembles many other regulatory standards, an in-depth examination showed that it only addressed the obligations of employers, but failed to address the right of employees and their participation in decision making process in relation to OHSM. Very likely, this could lead to the unbalanced communication between shore management and ship’s crew. In addition communications are basically conducted within the framework of the mandated OHSMS in the shipping industry. Accordingly, the communication is also likely to influence the operations of the management system. Based on these implications in the reviewed literature, further research questions can be raised following those in section 2.5.5:

8) How does shore-ship communication influence shipboard OHSM?

9) How does shore-ship communication affect crew’s OHS?

Following comprehensive discussions and presentation of research findings, the study will finally address:

10) What are the implications of shore-ship communication for effective OHSM?

11) What are the implications of this study for current maritime regulatory strategies?

Overall, this study aims to make a contribution to the theories of organisational communication, system-based OHSM in the Chinese context and regulatory approaches in both the international and Chinese shipping industry.

2.7 DOING RESEARCH IN CHINA

Since the research was conducted in China, this section introduces the OHSM status in China, Chinese culture and its influence on the workplace, and the development of the Chinese seafarers' labour market. This will help readers understand local contextual knowledge in relation to the research question.

2.7.1 OHSM Status in China

Section 2.6.3 notes that there more organisations have adopted OHSMSs in developing countries. However, the adoption of OHSMSs does not mean that traditional OHS problems, such as those originating from chemical, physical and biological hazards, have disappeared. A number of new OHS problems during the past decade have emerged as a consequence of the impact of economic liberalism. This started in major advanced economies and has intensified from the global mobility of productive activity (Walters, 2005). Problems include, but are not limited to, occupational overuse syndrome and psychosocial effects (Gunningham and Johnstone, 1999), deteriorating psychosocial work environments (Baird, 2005) and new epidemics in different regions of the world (Walters, 2005). OHS problems tend to be more severe in rapidly industrialising countries such as China (Zhi *et al.*, 2000; Gao and Sun, 2004).

The journey of industrialisation started after the birth of New China in 1949. However, it was accelerated in the late 1970s when China started its reform policy and opened up China to the world. This thirty years of development has transformed China from a centrally planned economic system to a socialist market system (Zhi *et al.*, 2000; Chen, 2003b), and becoming the workshop of the world (Brown and O'Rourke, 2003; Brown, 2007; Chen and

Chan, 2010). According to National Bureau of Statistics of China (NBSC, 2008), the annual increase of GDP has been on average of 9.8 per cent over the last thirty years. Meanwhile, the rapid development of the economy has contributed to deepened reform policies and fundamental industrial transformation. Along with the expansion of state-owned enterprises, private enterprises, rural collective and foreign invested companies have also flourished (Chen, 2003b).

The quick development of industrialised production was also accompanied by significant OHS problems. In 1996, more than 30 million people were engaged in hazardous occupations, accounting for about 30 percent of industrial workforce in China (Chen, 2003b). The official statistics in 2005 showed that over 16 million enterprises used toxic and hazardous materials and 200 million workers were involved in hazardous jobs (Chen and Chan, 2010). There was no evidence to show that their OHS was well managed. During the 1990s, there was an average of 100,000 fatalities per annum from industrial accidents. This number is almost 4 times more than those of developed countries (Liu *et al.*, 2005).

In addition, occupational health is also a significant problem in China. In the 1980s, major occupational health problems included 'occupational lung disease, industrial chemical poisoning, pesticide poisoning, heavy metal poisoning, physical hazards, and occupational cancer' (Christiani, 1984, p.59). In recent years, traditional health problems such as respiratory disease in China have by no means disappeared (Walters, 2005). The increasing involvement of new occupational hazards such as psychosocial pressures, ergonomic and physiological problems, exposure to radiation and chemical toxic agents, caused new types of OHS problems such as disorders to the central nervous system, circulation, immune system, and reproductive systems, and diseases such as tuberculosis, diabetes, hypertension, heart disease, cerebrovascular disease, and even some tumours (Gao and Sun, 2004). Apparently, workers fatalities, injuries and occupational health problems pose a serious negative impact to sustainable economic and social development in China.

The discussion in section 2.6 concludes that regulatory action is essential for dealing with OHS problems. As early as 1956, China published the first compendium of industrial hygiene standards, *The Tentative Hygiene Standards for Industrial Enterprises* (1956), to regulate workplace OHS issues. After 1979, other OHSM guidelines were developed in consideration of local practices and experience. The rapid industrial development in the

1980s and 1990s was accompanied by alarming reports of fatalities, injuries and diseases, which suggest a need for reinforcements to legal measures to protect workers' OHS (Chen, 2003b). In 2002, two new laws were implemented in China: *The Prevention and Control of Occupational Diseases Law* (2002) and *The Production Safety Law* (2002). In the same year, other relevant laws and regulations were also launched, such as *The Regulations on Safe Management of Dangerous Chemicals* (2nd revision), *The Regulations on Labour Protection for Using Toxic Substances in Workplace* (2002), and *The Occupational Disease Control Law* (2002). China has also ratified the workplace health and safety conventions developed by the International Labour Organisation (ILO) such as *The Occupational Safety and Health Convention* (155), *Safety and Health in Construction* (167), and *The Chemicals Convention* (170) (Brown, 2007). In general, these rules have played a significant role in safeguarding workplace OHSM in various industries in China.

Given the assumed positive role of those laws and regulations in relation to OHSM, the literature shows that the outcomes of their implementation were generally unsatisfactorily. Brown (2007) commented that government enforcement and employer compliance were highly variable and generally poor. One of the fundamental problems affecting the implementation was that local governments failed to balance the need for capital investment with the maintenance of OHS standards. For the purpose of attracting foreign investments, local governments tended to 'turn a blind eye' to health and safety problems (Chen, 2003b, p.369). Pringle (2003) noticed a local practice in terms of the implementation of the three simultaneous (OHS) measures specified in *The Production Safety law*. This requirement involved strong coordination between those responsible for planning, construction and supervisory management. In practice, local governments were interested in attracting investors and did not want to complicate procedures for them, as a result of which the maintenance of OHS standards was compromised. The lack of enforcement from official departments partially contributed to the recurrence of OHS problems, slow advances in OHS and appalling OHS records (Christiani, 1984; Chen, 2003b). In general, workplace safety in China was impeded by the absence of rigour and the failure of implementation (see Pringle, 2003).

Moreover, serious OHS problems can also be associated with the top-down management approach towards workplace safety (Pringle, 2003; Chen and Chan, 2004). The effect of this approach was further reinforced by obstacles to worker participation and the weak

collective bargaining powers with employers (as discussed in sections 2.5.3 and 2.5.4). In a more general sense, Su (2003, p.303) summarised some significant challenges to OHSM in China: 'lack of work safety awareness, backward infrastructure, and loopholes in management as well as strict supervision resulted in a continuing cycle of accidents and a serious prevalence of occupational diseases, which caused great losses in terms of both lives and assets'.

These longstanding OHS problems have not been improved in recent years. Reports on occupational injuries, diseases and unsafe working conditions are often seen in both Chinese and foreign media, particularly in mining and in labour-intensive manufacturing sectors (Chen and Chan, 2010). This produces a picture that there is a lack of effective OHSM in many industries in China. Some western scholars note that the fast economic development in China was shaping 'an explosive growth of hazardous industries and unsafe workplaces and enormous challenges in occupational health problems' (see Chen, 2003b, p.369).

The literature mentioned above mainly addressed OHS and its management problems in land-based industries. The literature search shows that little attention has been given to the Chinese shipping industry. Although national laws and regulations have equal impact on OHSM in the shipping industry, the systematic OHSM was not achieved until the introduction of the ISM Code in 1998. The situation on the implementation of the Code in China was given in section 2.6.1. In general, the literature about the OHS status in China presented in this section provides general background information about this study. Particularly, certain legal requirements need to be considered when a shipping company develops and revises its own OHSMS. This section helps readers to understand the local context of OHSM in the implementation of international standards such as the ISM Code in the Chinese shipping industry.

2.7.2 Chinese Culture and Its Influence on Workplaces

Hofstede (1980) found that national cultures have significant influence on people in organisations. The studies made in the international shipping industry showed that seafarers from different ethnic origins have diversified values, communication styles and organisational behaviour (Havold, 2005). Research findings from Kahveci and Sampson (2001), Hetherington *et al.* (2006), Bailey *et al.* (2006 and 2007) showed similar results.

Thus, the influence of cultural traits on seafarer work relationships should not be neglected. Filipino seafarers, for example, constitute almost one third of the international seafaring work force. The study made by Sampson (2003) showed that Filipino seafarers appear to be more 'cosmopolitan' in nature and active in social interaction. Filipino senior officers favoured friends, relatives or seafarers from their own region on board ship with the expectation of increasing friendly relationships and reducing loneliness (Sampson and Zhao, 2003, p.35). Since this study was conducted in China, key features of the Chinese culture and its influence on work relations are briefly introduced in this section.

Chinese culture has mainly been moulded by three philosophical traditions – 'Confucianism, Taoism, and Buddhism' (Fang, 1999, p.26). Briefly, Confucianism deals with human relationships, Taoism deals with life in harmony with nature, and Buddhism deals with people's immortality. However, the essence of traditional Chinese culture resides in the philosophical school of Confucianism (Shi and Westwood, 2000). Confucianism involves six core values: 'a) moral cultivation, b) importance of interpersonal relationships, c) family orientation, d) respect for age and hierarchy, e) avoidance of conflict and need for harmony, and f) concept of face' (Fang, 1999, p.109). Rooted in these values, the concepts of 'diligence', 'thrift', 'practicality', 'conservatism' and 'obedience' were regarded as the five most important characteristics of Chinese society according to a survey result (*Beijing Review*, 1988).

One common feature of Chinese culture the Chinese respect for hierarchy and authority. This respect stems from the Confucian's concept of *li* (rite or propriety). It plays an important role in human relations in order to maintain a person's hierarchical position in the society (Lu, 1991). Secondly, the Chinese tend to have a strong sense of collectivism and group orientation (Fang, 1999). Under such a cultural tradition, the collective moral judgement is usually treated as the formal behavioural standard and incentive. The family is usually regarded as a basic unit of the society. A boundary of a family or a work unit is seen as a centre of social activities, within which its members should keep harmonious relationship. Third, the concept of *face* is seen as a unique feature in the Chinese culture (Lu, 1991; Fang, 1999). Face-work in Chinese society is seen as an instrument to promote harmony within a group or family. Typically, in a particular group (unit), the positive sides are encouraged to be exposed to outsiders while the negative sides should not be brought to the public. Fourth, the importance of personal relationship (Guanxi) is also highly valued as

a unique concept in Chinese culture. Personal relationships broadly mean having connections or a special relationship with important or influential people (Porter, 1996; Fang, 1999). The persons who are said to have Guanxi usually share one or more important characteristics. Birth-place, lineage, personal friendship, working together are some of the examples that help shape such relationships. Personal relationships constitute an interpersonal network in which social exchanges are shaped and reciprocated.

The Chinese cultural features have significant influence on 'Chinese management practice' and 'specific management-related issues' in contemporary Chinese society (Shi and Westwood, 2000, p.191). An empirical survey among Chinese managers was conducted by Yang and Zheng (1989), which found that traditional Chinese culture persisted in modern enterprises. Tang and Ward (2003) found that Chinese managers hold a deep conception of collectivism in organisations. They viewed challenge as a collective endeavour rather than an individual one. Redding and Ng (1982) noted that the concept of *face* plays a role in social relationships in the context of organisational behaviour. They found that directors/managers in organisations in mainland China behaved as official-bureaucrats rather than business men. In addition, a large power distance was also found to exist between superiors and inferiors within an organisation in China, as a result of which the concentration of authority was high in hierarchy (Hofstede, 1991). Lu's study (1991) showed that the Chinese cultural traditions tend to lead managers of organisations to adopt a centralised organisational structure and decision-making processes. This was echoed in studies by Lan (1999) and Schlevogt (2002) emphasising that a strong personal influence from top management was perceived with a propensity for decision-making processes to be centralised.

It is understandable that the Chinese national culture penetrates into all levels of organisations, and organisational communication is equally influenced by cultural elements. The literature mentioned above may help to explain organisational communication behaviour from the Chinese cultural perspective.

2.7.3 The Development of Chinese Seafarers Labour Market

The literature suggests that globalisation has had a profound impact on international seafarers' labour market. Accordingly, it has had certain effect on the Chinese seafarers' labour market. Just before the 1990s, almost all the Chinese seafarers were permanent

employees of state-owned shipping enterprises. Since then, the uniform mode of employment has been broken and Chinese seafarers are no longer homogeneous, but increasingly heterogeneous in terms of their employment, working conditions and professional perspectives (Wu *et al.*, 2006). A new seafaring group termed 'agency-owned seafarers' has emerged into both the domestic and global labour markets (Wu, 2004, p.69).

By tradition, state-owned seafarers are those who are permanently employed by a state-owned enterprise with a long-term contract, while agency-owned seafarers are those employed by a crew agency with a flexible contract period and terms. The major difference is that the former mainly work for their own company's vessels, while the latter are entirely dependent on the domestic or international labour market. Moreover, state-owned seafarers have better social welfare benefits, while agency-owned seafarers have much less. However, agency-owned seafarers usually receive higher salary offers that might offset the shortage of welfare benefits.

Crew agencies have developed rapidly and become a major alternative channel for free-lance seafarers' employment in domestic and international labour market, although state-owned enterprises are still the major employers for Chinese seafarers (Wu, 2004). On the one hand, a consideration of the different employment modes of seafarers' employment terms has an impact on this research topic. On the other hand, the grown of precarious employment can potentially affect communication between shore management and ship's crew, particularly crew's upward communication., the level and quality of crew's participation, and even the operation of the OHSMS in a company. Therefore, the changing pattern of Chinese seafarers' labour market suggests the value of conducting this empirical study.

2.8 SUMMARY OF DISCUSSION

It was stated at the beginning of this thesis that the broad aim of this study is to explore the role of shore-ship communication and its influence on OHSM. This review shows that the current literature on communication mainly addresses its connection with safety performance and safe working environment, and did not situate communication into the framework of organisational OHSM. This shows the point of doing empirical research. Further, the dominant questionnaire-based surveys applied in the research on communication suggest the need for a qualitative examination, since social factors and

social relations behind the communication can be thoroughly investigated by the proposed method.

It was stated in section 2.5 that communication is complex and omnipresent in organisational contexts. Among all directions of organisational communication, the one between management and employee was identified as a key link that can significantly influence OHSM (also see Chapter 1). As a key means implementing an OHSMS, communication between the two is thus a good focus to examine outcomes of organisational OHSM. The analysis of the literature further identified the key aspects of management-employee communication in relation to OHSM from both perspectives. The identification helps delimit the subject matters which are feasible for this study.

Systems-based OHSM has been popular since late 1980s in both developed and developing countries. It originated from the evolution of OHSM strategies, as a result of which OHSMSs adopted by organisations have been increasing. Although the increased adoption of an OHSMS has led to both advocacy and criticism, they should not be the sole reason for rejecting adoption. Further, the complex outcomes suggest ongoing studies are necessary, particularly in different national and industrial contexts. The comprehensive review of OHSM literature in general and the case in the shipping industry has provided a sound contextual rationale for this study.

The study was conducted in the Chinese chemical shipping industry. This industry was significantly influenced by the introduction of the ISM Code in 1998. A mandated OHSMS was required to be established in all shipping companies subject to its terms among the contracting members of the IMO. As a developing country, China has made significant maritime regulatory adaptations to fully comply with the Code. However, few empirical studies have been made in terms of its implementation and their outcomes in the Chinese context. Dwyer (2000) argued that many developing countries were simply importers of standardised international regulations, and there might be a risk of mismatch. This offers an opportunity to examine whether there are such mismatches existing in the Chinese shipping industry. To better inform this study, the Chinese contextual background relating to this study was introduced in section 2.7. The study chose chemical shipping sector in consideration of its particular importance for OHSM and the growing share in global and Chinese shipping industry.

In this chapter the relevant literature in relation to this research project has been extensively reviewed and discussed. Based on this, the chapter also presented multiple, detailed research questions following the discussion of the literature in each of the major sections. Following the review of the literature on management-employee communication in section 2.5, a series of questions relating to examine the effectiveness of shore-ship communication and identify immediate factors that influence such communication were raised. Following the review of the literature on OHSM in the context of shipping in section 2.6, several questions about how shore-ship communication influences shipboard OHSM practice and crew's OHS were identified. In addition, the study will also attempt to explore the implications of shore-ship communication for effective OHSM as well as current regulatory strategy. Having discussed the literature and the detailed research questions, I will present my research design in relation to this study and the real experiences in my field work in the next chapter.

CHAPTER 3 METHODOLOGY

3.1 INTRODUCTION

A methodology is a general approach to studying a research topic (Silverman, 2005). It establishes how one will go about studying specific phenomenon. This chapter provides a detailed description of the methodology designed and applied for this study. It begins with a discussion of the methods used for the data collection, which is followed by a systematic account of the data collection process in the field. Next is a description of the ways the collected data was processed. Finally, ethical considerations relevant to this study are given at the end of this chapter.

3.2 DOING QUALITATIVE RESEARCH

The research in social sciences highlighted two research methods, i.e., qualitative and quantitative ones. Qualitative research is a situated activity that locates the observer in the world. It uses a naturalistic approach that seeks to understand phenomena in context-specific settings (Patton, 2001, p.39). It consists of a set of interpretive, material practices that make the world visible (Denzin and Lincoln, 2000; Atkinson, Coffey and Delamont, 2003). The approach needs a researcher's close involvement and can lead to a deep understanding of possible relationship, causes, effects and dynamic processes from qualitative descriptions (Burns, 2000). This practice transforms the world and turns the world into a series of representations. However, because of the subjective nature of qualitative data, this approach has been criticised for lacking adequate validity (Bernard, 1994). Also, the researcher's presence could have a noticeable effect on the subject matters of the study.

In contrast, quantitative research delimits social phenomena into measurable facts or common categories that can be applied to all of the subjects (Winter, 2000). It describes, tests and examines causal relationships between variables (Denzin and Lincoln, 1998). Summarised from the literature (Bryman, 1988; Bernard, 1994; Carr, 1994), the major strengths of the quantitative research are its precision, variable controlling (through design and sampling), causality statement and allowance for sophisticated statistical analysis. However, this approach cannot interpret people's experiences and cannot construct their own meanings. Potentially, the study could lead to findings that have little consequence given the difficulties in controlling for all variables.

The gaps in knowledge identified in the literature review for this research topic, argued for a qualitative study of the specific OHSM and communication issues in the shipping industry. This approach can provide an in-depth understanding of the social implications of these issues. However, the use of a quantitative approach (a tailor-made questionnaire survey for example) may be desirable as a complementary technique to improve the precision of the qualitative data. Previous studies have shown the desirability of integrating quantitative and qualitative research methods, which could be helpful for improving the validity of the research (Bryman, 1988; Bamberger, 2000; Bryman, 2006). Unfortunately, the role of this approach would be rather limited when applied onboard ship where the sampling is insufficient for a valid quantitative study. The number of possible responses (the sample is the crew on a ship) is always limited (20 crew on average); thus useful results would prove unlikely in consideration of the scale of this study. For this reason, the use of a quantitative study was discarded.

Qualitative research methods are the actual techniques and procedures used to collect data. In this study, the methods used for data collection are mainly interviews and observation. On the one hand, this choice was made in consideration of my research topic. This consideration, justified by Silverman (2005), states that the choice of research methods should be dictated by the research problem, rather than the unchallenged superiority of one kind of strategy. On the other hand, it has been argued that use of the 'detailed interviewing and observation' could 'gets closer to the actor's perspective' and that they 'provide a rich description of the social world' (Denzin and Lincoln, 2000, pp.10-11). In addition, complementary techniques such as informal talks were also applied where appropriate for data collection. In general, the purpose of choosing a combination of the research methods is to be able to get a better understanding of what immediate and underlying factors influence shore-ship communication and how this communication influences OHSM practice onboard ships. The following sections briefly describe and discuss how they are used for data collection.

3.2.1 Semi-structured Interview

As was noted in the literature review, the qualitative interview is one of the most common and powerful techniques for research in the social sciences. The use of interviews to acquire information is so extensive today that it has been said that we live in an interview society (Silverman, 2004). Qualitative interviews are based on ordinary conversation,

however with an emphasis on researchers asking questions and listening, and respondents answering. Warren (2001, p.83) notes that 'the purpose of most qualitative interviewing is to derive interpretations from respondent talk.' As a consequence, qualitative researchers tend to rely on interviews as a basic method for data gathering.

This study relies on one of the most common qualitative interview approaches – the semi-structured interview. May (2002) suggests that semi-structured interviews offer opportunities for people to answer more on their own terms than during standardised interviews. Semi-structured interviews are a useful method for obtaining clarification and elaboration on answers provided by participants. Prior to my field work, an open-ended and flexible interview schedule was designed and tested. Interview questions were divided into topic areas in which questions were supported by prompt words and phrases. The intention was to ensure that key elements of the questions were fully answered by interviewees. The interviews were conducted both in shore companies selected for the study as well as onboard their ships. The detailed interview questions are attached in the Appendix 3 and 4.

Significantly, this research method is based on the assumption that responses from the interviewees will be trustworthy and accurate, and have no hidden motives or intentions to mislead on the part of interviewees (Coffey and Atkinson, 1996; Silverman, 2004). In reality, this assumption is not always correct. The low reliability of this method has been identified as owing to its subjective nature (Silverman, 1993). This weakness should remind those using semi-structured interviews to be wary of negative influences on the authenticity and quality of the data the interviews yield. In addition to qualitative interview, field observations served as another powerful tool for data collection. Observations can reinforce and supplement the quality of the data gathered from interviews. It will be discussed next.

3.2.2 Field Observation

The primary goal of field observation is the observation of 'events' (Atkinson and Coffey, 2001). In a sense, many social scientists are observers of human activities and the physical settings where such activities occur. It is believed that 'the sociological understanding of a given social world is optimised by the deployment of participation and observation' (ibid, p.804). Silverman (1993, p.36) proposed five stages of observation, 'beginning research, writing field notes, looking as well as listening, testing hypotheses, making broader links'. One of the prominent advantages of field observation is that it can help to check

truthfulness, identify discrepancies, and discover potential distortions, which are less likely to be discovered by other qualitative research methods (Gold, 1997). One part of my field work was conducted onboard ships, and I spent some days on each of the ships. Thus, it was a good opportunity for me to conduct field observations.

Given the advantages of field observation, Denzin and Lincoln (2000) note that it is not without difficulties. On the one hand, its focus on the present may blind an observer to important events that occurred before his/her entry on the scene; on the other hand, informants in a social setting may be entirely unrepresentative of the less open participants. Further, the possibility of 'observer bias' remains, which prompted me to caution about drawing conclusions from my onboard observations mainly focused on crew's OHSM related events, which included, but were not limited to, 1) shipboard bridge and engine room activities; 2) cargo operations and maintenance onboard; 3) safety related meetings/drills; and 4) signage or posters for safe operation. Data generated from the observation of these activities enriched and complemented the interview data.

3.2.3 Complementary Techniques

Apart from the two major methods described above, during my research voyages onboard ships, I also had opportunity to talk with the crew in their working time or free time. I was seafarer in my early career and had some years working experience on board ships. My experience helped me establish good conversations with them over a wide range of issues in relation to seafarer's life at sea. Moreover, although I worked on several types of ships, I had never had experience on chemical tankers. It became an interesting topic between us and I raised a number of questions in relation to chemical operations. Many crew showed their willingness to answer my questions. Implicitly or explicitly, I raised some points that were closely related to my research topic. I found that some of the responses could be used as data for my research. These observations were recorded into my field notes. In addition, some of the written materials/records relating to OHSM were copied whenever I found them useful. Thus, informal talks and document analysis served as two additional and complementary techniques for collecting pertinent information.

3.3 THE PILOT STUDY AND PREPARATORY WORK

Once the design of research methods was completed, I began my field work. My supervisors had suggested the need to conduct a pilot study. Pilot studies are viewed as

good practice in the literature and before conducting substantial fieldwork for any research project. I started my pilot study at the end of July 2009 when I left Cardiff for China. I gave myself three major tasks: to conduct a pilot study to test the interview questions; to identify suitable companies for the study; and to obtain credentials enabling me to sail onboard. I completed all the pilot study work by the end of October 2009.

3.3.1 The Pilot Study

The pilot study was conducted from August to November 2009 in China. Interviewees were initially located using my personal relationship network. By using a 'snow ball' technique, more interviewees were located and a sufficient number obtained to begin the pilot. Telephone appointments were made prior to interviewing and I travelled around local regions within Jiangsu Province. Meeting points were usually at public places such as tea houses or offices, and in a few cases invitations to seafarers' homes.

The pilot study involved interviewing 6 seafarers, most of whom worked on chemical tankers. The interviewees included two captains (One is from a large shipping company in China; another from a large petrochemical shipping company with 8 years of experience on chemical tankers), one second officer (Oil tanker), one second engineer (both worked on oil tankers and chemical tankers) and two ratings (one on oil tankers, another on chemical tankers). The pilot study was conducted and guided by a designed semi-structured interview schedule. The interview schedule was designed to cover major aspects of the organisational communication process. Each time I finished an interview, I asked for suggestions to improve the questions and the way of asking them. Also, I reflected on the questions and answers and made corresponding changes. As a result, the interview schedule was revised three times throughout the pilot study.

During the pilot study, I had many experiences that proved useful for my forthcoming fieldwork. I was able to test all the first-version interview questions. As a result, the coverage of the interview questions was further narrowed down; certain repetitive, redundant and impractical questions were revised and prompts designed for the questions were improved.

A second discovery was that some techniques could be used to obtain richer data during an interview. During the pilot interview, I paid attention to the interviewee's narratives, but

very rarely used techniques to encourage the interviewee to elaborate his responses. While it was good to help me understand the background information and key activities involved in interviewees' story-telling, the focus on specific aspects that could generate robust data was weakened. After a few interviews, I noticed this deficiency, and learned to use prompts and polite interruption techniques to lead interviewees, as recommended by my supervisors.

A third discovery was the importance of building rapport with interviewees. In the beginning I thought I only wanted their answers. I came to notice a 'distance' between us by the way interviewees answered my questions. After a few interviews, each time before an interview, I spent a few minutes chatting with the interviewee about family, colleagues, personal experiences or even recent weather. I also highlighted my experience as a seafarer and lecturer in a maritime college in China. This helped relieve interviewee's anxiousness and tension, and established a rapport between us. I found that the subsequent interviewees showed more willingness to answer my questions and gave more details about their experiences.

3.3.2 Company Identification, Justification and Access Negotiation

The proposed fieldwork aimed to make investigations of two chemical shipping companies in China. The identification of the chemical tanker companies took me some time and effort, since it involved not only access to the companies, but also the justification of my choice for the study.

On one occasion during the literature review, I discovered a paper presented at the Shenzhen International Maritime Forum in 2008, written by Yuan and Fei (2008) both from a regional MSA in China. In this paper, all of the major Chinese chemical shipping enterprises were listed. I was delighted by this find, and I visited all of their websites in order to better understand the nature of their business. Considering my research topic, I thought that it would be appropriate to choose two of them which shared similar features. As a result two companies (C1 and C2) were prioritised as my first choices. The basic information showed that the types and number of their chemical tanker ships and their trading routes were similar. The research further showed that both companies shared a similar organisational structure and scale of operation. Detailed information regarding these two companies is given in section 4.3. As a result of this information search, a strong desire emerged – to choose these two companies as cases for my study. I made initial contact with

some of my colleagues in NT shipping college in China asking for their advice, since the college is one of the major Chinese maritime education and training service providers. My college principals and faculty have wide contacts in the Chinese shipping industry and fundamental progress was made on my return to China.

My request for assistance in contacting these two companies was presented to one of the senior leaders of the college where I used to work. One clue I had was that he was the most appropriate person to contact C1 for me. After he learned about my work and request, he kindly agreed that he would be responsible for contacting C1, mentioning that the college had established cooperation relationship with C1 for seafarers' education and training for many years. There would not be any problems in requesting permission to investigate C1 operations. As for C2, he was not familiar with it. Although the college has established wide cooperation relationships with many shipping companies in China, its connections with chemical shipping companies was limited, partly because it is a specialised sector which is comparatively less familiar than other sectors such as container and bulk shipping enterprises.

Another day, I approached another senior leader of the college. I read some information on the website of C2 and found that this company had a cooperation programme with a maritime academy from inland China. I had been told that this leader had close contact with the academy and that it was possible to contact C2 via the academy. I explained my situation and asked him for help with this contact. He replied me that he knew the academy very well, but that it was not necessary to contact the school - 'we could visit the company directly'. I was encouraged by his words. One week later, I was contact by the director of the presidential office of the college asking for detailed information about C2. I provided them with material published on C2's website and other contact details. On the same day I was informed by the director that this leader would have a business trip to the city where C2 was located, and that he would also visit C2. I was invited to join his team for this visit.

A week later we started our journey. Before our visit an official appointment was made by the college to meet with the general manager of C2. On arrival the senior leader of the college stated two purposes of our visit. One was to seek the potential possibility of cooperation between the two organisations, since the college, as one of the major maritime education and training institutions in the region, could provide strong human resource

support to the company. Then, the college leader frankly stated the second purpose, which was about my field work for writing a PhD thesis. The general manager stated that it was rare to meet outsiders, but visitors from educational institutions were an exception. During the meeting, he did not say much, but he showed a willingness to have further discussions in due course. As for my field work, the director asked me how I knew about his company and what I planned to do in his company. I explained my findings in the literature and briefly talked about my research topic and field work plan. He encouraged me and stated that it was a good topic. However, about my field plan to sail with ships, he showed concern about boarding certificates and personal medical and safety issues. I assured him that I would be fully responsible for all those issues and his company would not be held responsible for any of them. He concluded that a kind of contract could be signed to address these issues before getting onboard their ships.

I agreed to draft a written contract regarding those issues concerned for his approval. In addition, I made two key points about my fieldwork. One was that the conduct of the fieldwork was approved and monitored by the Cardiff ethical committee, and that field work conducted by Cardiff students would not incur any obvious or potential harm to the company or individuals, nor would subsequent written work. The second point concerned my credibility and suitability - as a maritime lecturer at the college, I had already taught many maritime-related subjects, such as maritime English and maritime communications. I also had a second officer's Certificate of Competence (CoC) for ocean going ships. I could even provide some voluntary services to the crew when I did my fieldwork onboard. Eventually, the general manager nodded and said 'should be no problem'. After the visit that day, a dinner meal was arranged with an official from the regional MSA. At dinner the visit to C2 was mentioned. Very surprisingly, we were told that the general manager of C2 was one of this official's good friends! The official said that he would give the general manager a call to re-assure him about my field work arrangement. My long lasting worries about the possibility of ever doing my field work were much relieved.

I understood the importance of maintaining such relationships. I wrote an email to the general manager, expressing my appreciation to him and mentioned the name of his friend, the official from the regional MSA. I told him that as soon as I completed my pilot study and my supervisors were satisfied with it, I would contact him again to make arrangements for the field work. The next morning I received his modest reply, 'Welcome Doctor Xue to

visit his company to deliver my expertise at anytime'.

After I returned from the visit to C2, I was told by the leader who agreed to contact C1 for me that the C1 had agreed to assist my field work. I was asked to produce a written report about my research topic as well as my field work plans in the company (described in section 3.4). Thus, negotiations for access to the two companies were successfully completed.

Many of the researchers I met expressed their difficulties in negotiating access for their field work. In my experience it seemed relatively easy. This was due in part, to my special status as a PhD student at the Seafarers International Research Centre (SIRC) in Cardiff University as well as having worked as a maritime lecturer in a shipping college in China. Teachers are well respected in the Chinese Society. I brought forward the issue to senior leaders at the college. In the first case, it could be seen that the senior leader's direct relationship with C1 was the key, and this added weight to the power of negotiation. However, in the second case with C2, the senior leader, as a 'legal person', was more powerful and credible in the negotiation process than me as a 'natural person', since he spoke for a public organisation. Moreover, indirect relationships also helped in the success of negotiation. C2 was connected by way of a third party – the inland maritime academy. In both cases direct and indirect relationships played a key part in the negotiation process. The importance of relationships (Guanxi), as one of the key characteristics of Chinese culture, has been widely addressed in the literature (see section 2.7.2). My negotiation process for the access of my field work reinforced my understanding of it in the academic context.

3.3.3 The Acquisition of Credentials

Since I had decided to study the chemical shipping industry, sailing with chemical tankers was unavoidable. To be allowed to sail, obtaining certain credentials is essential. The first qualification I needed to get is the Seaman's Book, similar to a citizen's passport. The Book is only valid for three years. An application is made to the China MSA and it usually takes about two months to get it. When I was in China in August 2009, I made an application in the name of the staff of the NT shipping college, which made it easier to get administrative approval, since the application was made by an organisation rather than an individual. A second necessary qualification is seafarer's basic professional training which includes four items: basic safety, advanced fire fighting, proficiency in life raft and proficiency in

medical care. Luckily, had I received this training early in my career and the training certificates were still valid. A third necessary qualification is dedicated to the requirement for those working for chemical shipping. Chemical shipping is a specialised shipping sector; accordingly, special training must be given to those working on chemical tankers to meet requirements of both international conventions and Chinese national regulations. The training includes two separate and inter-related programmes: chemical tanker safety knowledge and chemical cargo safety operations. For me, as a researcher who would not be involved in shipboard operations, I needed to take only one programme, i.e., chemical tanker safety knowledge training. It was a seven-day intensive training programme. I travelled to the training centre and participated in the programme in early October 2009. The training concluded with a formal assessment (a computer based theoretical one and a practical operational one) supervised by officials from the regional China MSA. One month after the assessment, I was informed I had passed the assessment and a CoC was sent. Apart from this certificate, two other certificates were required - a seafarer's service history record book (issued by China MSA) and a health examination certificate. By the end of November 2009, I had obtained all the credentials necessary for me to sail at sea.

3.3.4 Outcome of the Pilot Study

From the pilot study, I learned some good techniques on how to conduct interviews. The successful identification of and access to the companies and acquisition of credentials ensured the follow-up arrangements of forthcoming field work. In general, it seemed that my pilot study had met the expected level of research. True, some issues needed to be clarified and more focused to ensure the quality of the forthcoming field work. Face-to-face meetings with my supervisors were necessary for the assessment on the outcome of my pilot study. I returned to Cardiff in Mid-November 2009. Face-to-face and email supervision were arranged on a weekly basis. My interview schedule was revised and certain re-orientations were considered. As a result, a detailed fieldwork plan was produced. The time frame and key time nodes for completing each part of work were estimated. Eventually, field work plans were presented to and agreed upon by my supervisors. Their comments and suggestions about the interview techniques, research methods and data handling were valuable and constructive, which reinforced my confidence for undertaking this project.

3.4 IN THE FIELD

In Mid-December 2009, I returned to China for the field work. As stated in my plan, the field work involved visits to two companies as well as sailing voyages on 4 ships (2 ships from each company). The major steps that I followed are detailed in the following. This section summarises my fieldwork spanning from Mid-December 2009 to early May in 2010. The field work was completed in line with my fieldwork plan.

3.4.1 Field Work on Shore

Since the two companies had agreed to host my field work, I contacted them directly on my return to China. I started with C1 and was asked by the company to write a written report on my research topic, a general description about what I intended to do in the company's office as well as onboard their ships. I produced a two-page written report which included all the aspects in my fieldwork plan. The report covered five points. The first was about my research topic and the methods I planned to use to collect data. The second was about ethical issues. Confidentiality and anonymity were guaranteed. I stressed that this was academic research and had nothing to do with sensitive topics such as politics, corporate economics or details about the company's commence and trade. The third was that I would be responsible for all credentials needed for me to sail. The fourth was that I would be responsible for all travelling and accommodation costs during company/ship visit. The final point was that I emphasised my previous work experience as a second officer onboard and as a lecturer at NT Shipping College. I added that I would provide voluntary technical assistance to crew onboard.

This statement was faxed to C1. Later, I was told that they needed a stamped official letter from the college, since sailing at sea could be risky, according to the contact person in C1. I understood that the key issue was about my personal health and safety. I separately drafted a personal statement. I said that, as a formally registered student in Cardiff University, I had medical and travel insurance and the company would exempt all responsibilities in this regard. I signed the statement and presented it to the college. The college agreed to write a letter of recommendation for my field work. After the two documents were sent to C1, I received permission for my field work in the company as well as onboard its ships.

I also contacted C2 and sent another copy of all the documents to C2. For C2, they were particularly concerned about my personal health and safety onboard their ships. My wife was asked by C2 to give signature on my personal statement in order to indicate my

family's support.

In early January 2010 my fieldwork arrangements for both companies were secured shortly after I started my visit to C1. First I arranged to see the vice general manager in charge of safety production and fleet management for the company. I briefed him what I planned to do and he was fully supportive, since my plans had already been approved by the top manager of the company. Before the interviews, I drafted an interview plan and the interviewees were selected from relevant departments. Times and dates for the interviews were also discussed. My supervisors suggested I do 2 interviews a day.

At the beginning of each interview, I presented the interviewee with an information sheet (see Appendix 1). The content was mainly taken from the written report described at the beginning of this section. I underscored my identity as a PhD student at Cardiff University, as well as a lecturer at the NT shipping college in China. My use of my identity as a teacher gave me a lot of convenience – teachers are widely respected by the general public in the Chinese culture. During the interviews, I did notice their respectful attitude. Also, the experiences drawn from my pilot study (stated in sub-section 3.3.1) were applied, and I found they helped in managing interviews. In total, I interviewed 7 people which included: 1 vice general manager in charge of safety; 2 from the marine affairs department (1 head; 1 guide captain); 2 from the marine engineering department (1 head; 1 guide chief engineer); 1 from the quality and safety department (superintendent); and 1 from the crew department (vice head).

The interviews were conducted according to the interview guide for shore management (see Appendix 2). The interviewees' detailed information is provided in Appendix 4. Apart from interviewing shore management, some of my time in C1 was spent reading the company's OHSM manuals. I took notes when I read them, since these documents are treated as company secrets and I was not able to make photocopies. In total I spent five days at C1's shore operations centre, as indicated in my plan. At the end of my visit arrangements for sailing with two chemical tankers were considered. To avoid an unnecessarily long-stay on a particular ship, my supervisors had suggested using regional trading ships.

After my interviews at C1, I visited C2's shore operations the following week. Although the two companies share a similar organisational structure, one major difference is that the

safety and quality department for C2 managed both marine affairs and the quality system management (see details in section 4.3). Again, I spent 5 days working there and followed similar interview and research procedures. I interviewed 7 people, at C2 including: 1 vice general manager in charge of safety; 3 from the safety and quality department (1 head; 1 marine affairs manager and 1 general captain for the fleet); 2 from the marine engineering department (1 head; 1 general chief engineer for the fleet); 1 from the crew department (vice head). The interview guide and interviewees' information are given in Appendix 2 and 4, respectively. Although the fieldwork in the company was sometimes interrupted by customer visits, temporary schedule changes, telephone calls and internal meetings, etc., I followed the planned schedule. Again, the visit concluded with a discussion about arrangements for sailing on two C2 tanker ships after completing sailing with C1.

My field work in the two companies was completed within the planned time frame. A preliminary impression of the shore interviewees' accounts was that their communication with ship's crew was good. However, as stated in the introductory chapter, the major focus of this research lies in examining how communication affects shipboard OHSM practices. Thus, the data collected from crew onboard ships is crucial to my account.

3.4.2 Field Work onboard Ships

A ship will be sailing at sea most of the time, hence careful planning is necessary to board a ship. To avoid a long-wait, I gave the contact persons in both companies early notice – three to four weeks before planning to board their ships. I left matters to the companies to identify an appropriate vessel for me. The contact for boarding each next ship was made as soon as the time for boarding one ship was fixed. In so doing so, my waiting times for ships were shortened. I began my first voyage not long after my field work in C2. Proposed days for sailing on each of the four ships were about 7-14 days; however it was impossible to guarantee a ship's sailing schedules in practice. Although there were some external disturbances such as berth queuing, (bad) weather conditions and machinery failures (all noted in my field notes), the planned sailing schedules were not much affected – my four voyages are summarised in the table below (Table 1). Particulars of the ships I sailed on in both companies are also illustrated (see Table 2). The cargoes carried on the four ships during my sailing voyages were all either toxic, corrosive or/and explosive [indicated on the Material Safety Data Sheet (MSDS[iv]) provided by cargo importers/exporters/owners].

[iv] MSDS: It is a form like data sheet indicating the properties of a particular chemical, its risk to people and

Table 1: Sailing Voyages

	COMPANY 1		COMPANY 2	
	Ship 1	Ship 2	Ship 3	Ship 4
Port of Departure	Changzhou, China	Qingdao, China	Jiangyin, China	Changsu, China
Cargo Carried	Phenol	P-Xlene	Ethene Diol	/
Port of Call	Daesan, South Korea	Dalian, China		Mailiao, Taiwan Region
Cargo Carried	Phenylethylene	P-Xlene		Dichloroethane
Port of Destination	Shanghai, China	Qingdao, China	Quanzhou, China	Jiangyin, China
Date of Embarkment	1 February	1 March	20 March	8 April
Date of Disembarkment	12 February	7 March	26 March	24 April
Total Days onboard	13	8	7	17
Total days of Sailing	45			

Table 2: Ships' Particulars

	COMPANY 1		COMPANY 2	
	SHIP 1	SHIP 2	SHIP 3	SHIP 4
Length overall	90M Approximately	135M Approximately	95M Approximately	100M Approximately
Dead Weight Tonnage	3,700T Approximately	12,400T Approximately	3,900 T Approximately	3,600 T Approximately
Number of Tanks	5P+5S	4P+4S	4P+4S	4P+4S
Cargo Tank Coating	316L Steel	Epoxy Resin	Zinc Silicate	Zinc Silicate
Main Sailing Areas	China, Northeast and Southeast Asia	China, Southeast Asia and Middle East	China, Northeast and Southeast Asia	China, Northeast and Southeast Asia
IMO Category	IMO I	IMO II	IMO II	IMO II

environment that serves the need of workplace safety.

Year Built	Mid 2000s	Late 1990s	Late 2000s	Mid 2000s
Ship's Nationality	Chinese	Chinese	Chinese	Flag of Convenience
Crew's Nationality	Chinese	Chinese	Chinese	Chinese
Number of Crew	About 15	About 20	About 16	About 18

I understood that collecting quality data while at sea was most important. I also understood that I should not neglect my relationships with the crew aboard. During the first two to three days, I did nothing about data collection, a suggestion from my supervisors; instead, I asked for a set of overalls and a safety helmet from the bosun to participate with the crew at their labouring activities whenever appropriate. Meanwhile, I tried to meet and familiarise with all people onboard and memorised their names. The purpose was simple - to establish a good rapport with them. My previous pilot study experience told me that I could not collect quality data without the crew's recognition and cooperation. Later, this practice was confirmed by many of the crew. They were kind to me and willing to talk with me; some even praised me.

My main mission onboard was to interview crew. The planned sample number of crew for the interview on each ship was between 10 and 12 crew members. When I started locating the crew for interviews, each individual's background was considered. For example, cadets were not considered for interviews. Also, when a rating/motorman was available for interview, the most experienced persons were prioritised. One senior engineer (2nd engineer) on one of the ships was not interviewed, since he had been onboard for less than a month and knew little about the company.

Interviews onboard ships were conducted in either the crew cabin or sometimes in my cabin during their off-duty time. Before an interview, I showed the interviewee an information sheet, the content of which was mainly the same as that used in shore interview. My previous interview experience (from both the pilot study and shore visits) helped me improve the quality of interview data. In total I conducted 47 interviews on board four ships. The interview guide for crew is given in Appendix 3; crew interviewees' information is listed in Appendix 5.

Apart from interviewing, I also observed some OHSM-related activities onboard. Since I was not assigned to scheduled work tasks, I was free to move between different departments and locations on the ships. This freedom gave me opportunities to visit wherever I thought useful, to sense data intentionally and unintentionally. For convenience of observation, I sometimes participated in the crew's work. I helped with mooring and unmooring; partial cargo operations; cargo hold washing; cargo floor mopping; and keeping watch on the bridge. I needed to see the way of doing things and understand the congruence and departure between what was notionally required and what actually happened. Moreover, I tried to establish connections between observed data of sailor behaviours and shore-ship communication. Generally speaking, my participation in crew's work indicated that my stay onboard was not only 'eating and playing', but actually sharing their work and experiences. When I joined them as a green hand on their chemical tankers, I had many questions to ask. Although they often called me 'teacher', I modestly called them 'master'. Shared work and mutual respect allowed me to get into the scene in a natural way without disturbance to their daily working habits/practices.

Since my study is related to communication and its relation with shipboard OHSM practice, I paid special attention to crew's OHSM practices onboard. As a result, I observed some of the OHSM consequences on each of the ships. For examples, onboard Ship 1, the strong ink-like toxic smell of phenol was pervasive in the ship's accommodation area [this almost made me faint on S1 C1 (Field Notes, 8 February 2010)]. I was told by the crew that similar situations occurred from time to time, and were unavoidable. Onboard Ship 2, the ratings conducted risky operations without effective OHS protection in place during the process of cargo (p-xylene) sample-taking on the main deck for the purpose of conducting a cargo survey (Field Notes, 4 March 2010). Onboard Ship 3 in the cold early spring the bosun only wore a cotton hat rather than the proscribed safety helmet during the ship's mooring work (Field Notes, 24 March 2010). Onboard Ship 4, I participated in the cargo tank washing process and observed that ratings and bosuns were all under-protected with anti-chemical gloves and safety helmets (Field Notes, 9 April 2010). There were other examples recorded in my long field notes and not all are listed here in detail. In general, my impression on the outcome of OHSM practice on the four ships was discouraging. More evidence will be presented in the data chapters.

Informal talks with crew also contributed to my data set. The long stay in the onboard

community gave me many opportunities to chat with whomever I met at their leisure time in either the crew's cabin or in the lounge room. Sometimes, it made contact during the crew's working hours, for example, at officers' watch keeping duty on the bridge. Another good occasion for informal talks was right after a formal interview. As soon as the interview was finished and the recording stopped, interviewees often added a bit more to their previous answers or made general comments about my research questions.

While onboard ship, I kept a field diary on a daily basis and noted whatever I saw, heard, and felt during the day. The longer I stayed on one ship, the longer the field diary would run. The field diary was organised in chronological order and was easily retrieved. My field notes amounted to 21,000 words. Information from my field observations and data that emerged from informal talks with the crew provided a major contribution to this thesis.

Last but not least, I read some of the OHSM documents onboard and copied some of them for potential future use. Written documents related to the practices I had observed were prioritised.

To sum up, the research methods used onboard ships were multifaceted. They included interviews, observations, informal talks and document collection and analysis. My field diary was an important resource for reflecting on the data collected from observation and informal talks.

During my field work, email was the major channel for communication with my supervisors. Before each time of sailing, the supervisors were informed and I prepared a brief introduction to the sailing voyage. At the end of each voyage when I sent a fieldwork report which usually included a general description of the voyage, a transcription sample, a full set of field notes (field diary), and a few personal/fieldwork pictures. By doing so, my supervisors had a clear picture about what happened and what I had done on that particular ship. The two weeks after my last ship voyage I returned to Cardiff, which signified that my work had moved to the next step. In total the time span for my fieldwork was four months plus three weeks. I spent 45 days onboard 4 chemical tankers sailing in the western Asian Pacific region (also see table 2).

3.5 DATA PROCESSING

When I finished my field work, I started systematically sorting through the data. The interview data accounted for the majority. In all, I performed 61 interviews. Most of the interviews were recorded [interviews with one superintendent (C1), one rating (S2 C1) and one fourth engineer (S4 C2) were noted down]. All of the interviews were conducted in Chinese. I transferred the recordings into a PC, and transcribed all the interviews into English while listening. This work was done whenever I had time - typically during the time waiting at home to board the next ship. There was a large volume of data which would involve significant costs if done by a translation agency. However, I found it helped me to better understand the data essential for its analysis and interpretation. In most cases, I found that the translation work was fine in terms of my English proficiency. However, the real problem for me lay in the translation of jargon and idioms. Whenever I confronted the problem, I marked it first in Chinese. If a quote was selected for use, and I could not find the answer from dictionary, I consulted my Chinese colleagues in the SIRC. By doing so, the possibility of data bias could be kept to the minimum.

As for the field notes which carried data from field observations and informal talks, I wrote them directly in English. Thus, they were ready for immediate data analysis. When the transcription was completed together with the field notes, I wrote a preliminary Word document of data analysis. I made marginal notes on the data most closely related to my research topic and highlighted it. Next, I made a second round of data analysis. All the interview data and field notes were coded with the aid of Nvivo 8.0 software, as a result of which 1,058 tree nodes and 33 free notes were generated. Categorisation of the codes was also made according to their position within set subject areas. Next, the difference between the data collected from shore management and ship's crew was considered. Eventually, a tree structure category was produced. In general, this way of organising the data set facilitated a better understanding and identification of the main themes that were to this research.

3.6 ETHICAL ISSUES

In the beginning of section 3.4, the ethical issues for this research were briefly mentioned. Researchers need to consider the ethical implications of their work and be alert to them (Bulmer, 2001). Ethical issues in social research are not always clear-cut, but the key lies in the preservation of confidentiality and the privacy of people involved (Homan, 1991). Thus, researchers have to take account of principles such as respect for privacy and the likelihood

of damaging consequences of the use of their research methods (Oliver, 2003).

Rees (1991) suggests that it is important to consider ethical problems at the early stages of the research project. As early as the end of 2008 when I completed the first draft of the literature review and methodology chapters, my research plan and ethical considerations was approved by the Cardiff university research ethics committee prior to beginning field work. Before the commencement of the first interview, I made a clear statement about the ethical principles that regulate and guide all the research activities (as described in section 3.4). Anonymity and confidentiality were guaranteed to the interviewee before I asked for their permission for voice recording. Since this study was conducted in organisational context, any future publications relating to this study could make the organisations vulnerable if their identities were not well preserved. The organisations could also be disadvantaged as a result of publicity regarding their work practices. Homan (1991) noted that anonymisation is an important principle to maintain when reports are disseminated, decreasing the likelihood of being identified. In all, I am fully aware that it is important to protect interviewees as well as their organisations from any harm that could result from this research. I can ensure that my research meets the ethical guidelines of Cardiff University.

3.7 SUMMARY

This chapter elaborated the qualitative research methods applied in this study and explained why they were adopted in this research context. It detailed some preparatory work prior to my field work. A pilot study was conducted in the local setting in Jiangsu Province of China prior to my real field work. The experience gained from the pilot study significantly contributed to the quality of my field work data. During the period of my pilot study, the two companies selected for the study were identified and justified. Meanwhile, the process of access negotiation was detailed. The preparatory work also included the acquisition of credentials that were essential for the acceptance of my sailing with a chemical ship. Among them, the chemical tanker safety knowledge training certificate was highlighted, which was granted by my participation in a seven-day programme in a recognised regional maritime training centre for seafarers working in specialised ships such as oil and chemical tankers.

Following the description of the preparatory work, this chapter detailed the periods of my field work in the shore offices of the two companies, as well as on four of their ships. It

explained how the research methods were applied and what the outcomes were in the field. As a result, a good quantity of data was collected from different sources (mainly qualitative interviews and shipboard observations). Lengthy field notes were taken throughout my trips. This chapter also described how the data was processed and categorised with the aid of computer software for qualitative studies. At the end of this chapter, considerations of ethical issues were explained about the whole period of my field work.

As noted in Chapter 1, this study was conducted in two chemical shipping companies in China. The following chapter will review relevant literature about the chemical industry and introduce basic information about the two companies.

CHAPTER 4 INTRODUCTION TO THE CHEMICAL SHIPPING AND THE CASES FOR THE STUDY

4.1 INTRODUCTION

This chapter introduces the chemical shipping industry in international and Chinese context and will provide details of the situation in the two companies studied. Its purpose is to provide essential, contextual information for the study.

4.2 INTRODUCTION TO THE DEVELOPMENT OF CHEMICAL SHIPPING

This section begins with an introduction to chemical ships, the global and Chinese chemical fleet as well as the major industrial players that influence the international chemical industry. A brief account of the pattern of chemical trading in the world and its impact on the development of the chemical industry in China is also presented since recent changes have significant implications for the chemical shipping industry in China.

4.2.1 Types of Chemical Tankers

Ships are regarded as 'technically sophisticated, high value assets' (ICS and ISF, 2008). Chemical tankers are special, in that the average technical standards and prices per vessel are much higher than for others such as general cargo and container ships. Chemical tankers are one type of specialised ship used for carrying dangerous cargo. In a broad sense, a chemical tanker may be defined as 'a tanker of greater sophistication than conventional petroleum products tankers and able to carry a range of petrochemicals and non-petroleum liquid cargoes' (Drewry Shipping Consultants, 1983, p.1). Given the complex chemical trade and diversity of ship sizes and types, a modern chemical tanker should be able to carry 'a wide range of petrochemicals, vegetable, fish and animal oils, carbohydrate derivatives such as molasses, inorganic acids and coal tar products' (ibid, p.1). Particularly, cargoes with corrosive, inflammable, reactive, explosive, toxic or volatile natures should be able to be carried without posing any danger to the crew, the environment or give rise to any cross-contamination during the loading or unloading of cargoes (Arslan and Er, 2008).

Chemical tankers can be divided into three different basic types in relation to their cost and complexity – 'chemical carriers, specialised chemical carriers and product/chemical carriers' (Drewry Shipping Consultants, 1999, p.93). From the regulatory perspective, IMO has also classified chemical tankers into three categories: i.e., IMO I, IMO II and IMO III

chemical tankers. An IMO I tanker is designed for carrying most dangerous cargoes with high level of toxicity, inflammability, corrosiveness and reactivity. Generally, special stainless steel material is used for building cargo tanks to prevent chemical reactions between cargoes and the tank. Accordingly, the building cost is much higher, almost double that of other types of chemical ships with coated cargo tanks. However, not all of the cargo tanks in chemical ships use stainless steel material. An IMO II tanker carries less hazardous materials and IMO III tankers the least hazardous cargoes. The technical requirements for materials used for the cargo tank are accordingly lower in IMO III tankers than for IMO II vessels. Alternatively, metallic (such as epoxy resin, zinc silicate and phenolic resin) or non-metallic materials (such as natural rubber, polyvinyl chloride, and glass fibre reinforced plastic) can be used for coating the surface of soft steel cargo tanks. In principle, when considering carriage of a specific cargo, the physical and chemical features of the cargo should be incompatible with that of the material used for the tank coating. This is one of the key factors that needs to be considered when accepting cargoes for transportation.

The above-mentioned categorisation of chemical ships is not based on sizes, but on type. In terms of size chemical tankers can be classified into three categories：

- ✧ Small-sized chemical tanker

  Tonnage: 150~3,000 Dead Weight Tonnage (DWT)

  Sailing Routes: Generally used for inland or coastal waters.
- ✧ Medium-sized chemical tanker

  Tonnage: 3,001~10,000 DWT

  Sailing Routes: Generally used for sailing from China to Japan, Southeast Asia, or Australia.
- ✧ Large-sized chemical tanker

  Tonnage: above 10,001 DWT

  Sailing Routes: These ships can be used for global voyages.

This categorisation is different from those for oil tankers, which are generally larger. The tonnage of a chemical tanker is almost ten times smaller than that of oil tankers in terms of its absolute tonnage measurement. As described in section 3.4.2, among the four ships I sailed, three are medium-sized ships, and one from C2 is a large-sized ship. There are other ways of categorising chemical tankers in the literature, however, for the purpose of this study, I need not go further.

4.2.2 The Development of the Global Chemical Fleet

There is a broad rule of thumb which suggests that 'trade expands at roughly 1.5 times the growth in the world economy' (Drewry Shipping Consultants, 1999, p.35). As a part of the total international logistics chains, ships carry about 90 percent of the total world trade volume (Stopford, 1997). Before and during World War II, most liquid chemicals were shipped in barrels, drums or small tanks. Demand for chemicals grew rapidly during the 1950s and the petrochemical industry began to expand. This dictated a fundamental change in transport methods (Drewry Shipping Consultants, 1981). Liquid chemicals were not carried in bulk at sea until the mid-1950s. The first ocean-going specialist bulk liquid chemical carrier, the 'Marine Dow-Chem' (17,205 DWT) was built in 1954 (Drewry Shipping Consultants, 1983, p.1). In 1958, there were only 4 owners operating 9 chemical tankers totalling 43,000 tons deadweight. By the end of 1982, the fleet of large chemical tankers amounted to 275 vessels totalling 7 million DWT (ibid, 1983); by the end of 1998, the chemical tanker fleet comprised 'over 1,497 vessels of 20.847 million DWT' (Drewry Shipping Consultants, 1999, p.5). At that time, the largest independent owners controlled around two-thirds of the deep-sea chemical fleet. These included Stolt-Nielsen, Odfjell-Seachem, Jo Tankers, and Mitsui OSK Lines (Tokyo Marine) (Drewry Shipping Consultants, 1999). In recent years, according to statistics from Drewry Shipping Consultants (2006), the total number of chemical carriers was 2,831, totalling 55.61 million DWT (Table 3). In terms of the chemical carrier charter market, based on a survey by Drewry Shipping Consultants (1999), it was estimated that around 50% of all chemical movements are covered by contracts of affreightment, while 35-40% were covered by the spot market[v]. The remainder was made up from other charter arrangements and cargoes moved in tonnage controlled by exporters or importers. Although these figures represent the overall distribution, of course, there are regional variations, as well as variations based on different types of chemicals.

The escalation of the growth of chemical tankers reflects the increasing demand for chemical transport in the world. According to Dale (2008), the chemical tanker shipping sector enjoyed very good years between 2003 and 2007, and the 'China factor' has made a significant contribution to this achievement.

[v] Spot market means a market in which goods such as grain or crude oil are bought and sold for cash and delivered without delay.

Table 3: A Survey of the World Chemical Tankers Fleet

Ship's Type	1000~ 5000t		5000~ 10,000t		10,000~ 20,000t		20,000~ 30,000t		30,000~ 40,000t		40,000 above		Total	
	No.	Total DWT	No.	Total DWT	No.	Total DWT	No.	Total DWT	No.	Total DWT	No.	Total DWT	No.	Total DWT
IMO 2	222	701	283	2134	299	4540	56	1376	89	3151	61	2762	1010	14664
IMO 2 CPP[vi]	18	54	8	57	4	56	1	21	7	226	0	0	38	414
IMO 2/3	66	208	122	936	81	1158	43	1097	49	1760	17	691	378	5850
IMO 2/3 CPP	6	14	12	76	0	0	0	0	6	228	0	0	24	318
IMO 3 DH[vii]	51	200	42	290	17	239	3	82	28	973	62	2890	203	4674
IMO 3 DH CPP	7	26	22	158	19	295	13	367	132	4818	225	10324	418	15988
IMO 3 Non DH	79	221	89	606	32	504	18	503	4	143	10	449	232	2426
IMO 3 Non DH CPP	22	56	30	202	14	190	13	367	9	313	14	622	102	1750
Non IMO	100	265	74	514	49	760	30	861	80	2808	93	4318	426	9526
Total	571	1745	682	4973	515	7742	177	4674	404	14420	482	22056	2831	55610

Note: Total DWT is in thousands of DWT

Source: *Drewry Shipping Consultants (2006) Chemical Carriers*.

4.2.3 Major Players

Apart from the global chemical fleet, there are other major players in this industry, which significantly influence the development of global chemical shipping. These international and industry associations play key roles in formulating international maritime standards and industrial guidelines, which are crucial for the healthy and sustainable development of the industry.

The IMO is a specialised agency of the UN. Founded in 1948, The IMO's major task is to develop and maintain a comprehensive regulatory framework for shipping which covers safety, environmental concerns, legal matters, technical co-operation, maritime security and efficiency of shipping (IMO, 2008a). The IMO plays a leading role in contributing to the adoption of various international safety standards, typically, the adoption of the ISM Code described in section 2.6.1. The ISM Code is essential for officially ensuring the safety of life at sea and for preventing marine environment pollution.

To be able to sail legally and globally, a ship needs to register with a particular country. The country becomes the Flag State of the ship. A Flag State is responsible for implementation of international standards adopted by the IMO and national maritime laws and regulations among all of its ships. Thus, the maritime administration of the State needs to make regular

[vi] Clean Petroleum Products

[vii] Double Hull

safety inspections of its ships to verify that ships are in compliance with various standards, rules and regulations. It is called Flag State Control (FSC).

In some cases a Flag State might fail to fulfil its commitment to strict implementation, as a result of which some ships degrade to substandard ships sailing in an unsafe condition. This problem is addressed by the Port State Control (PSC). A PSC is a scheme organised on a regional basis for surveillance of ships calling at a country's port. The maritime administration of that country is entitled to conduct safety inspections on those ships, since an unseaworthy ship sailing through coastal waters of any country can pose dangers to life, property and the marine ecological environment. The purpose of PSC is to verify that ships meet various international conventions or agreements and that ship conditions are not hazardous to crew's health and safety (see Cariou *et al.*, 2008).

Apart from official organisations, the review of the literature showed that supply chains also have significant influences on OHSM. Research from the UK food processing industry shows both direct and indirect supply chain pressures can impact on health and safety regimes within each factory, and supply chains play contradictory (both positive and negative) roles in relation to health and safety (Lloyd and James, 2008, p.726). Supply chains are hierarchical with uneven distributions of power within them. On the one hand, they provide potential for dominant actors to influence the behaviour of others in the business relationships (Walters, Bhattacharya and Xue, 2011, p.68). On the other hand, they are powerful and growing influences on the nature of working conditions and the work environment (ibid, p.71). The role of the major actors in the supply chains should not be neglected. In this study, the supply chains involve the following organisations that are of significant influence in terms of the health and safety management of this industry: the International Association of Independent Tanker Owners (INTERTANKO); the International Parcel Tankers Association (IPTA); the Chemical Distribution Institute (CDI); and the Oil Companies International Marine Forum (OCIMF). In this sub-section, the CDI and the OCIMF are introduced, since they are the major industrial actors and have direct impact on chemical shipping and were often mentioned by the interviewees during my fieldwork.

The CDI was founded in 1994 and is an independent, non-profit organisation funded by the chemical industry. Its aim is to ensure the development and the preservation of an

inspection system for risk assessment concerning transport and storage of chemical cargoes (CDI, 2008). The CDI-Marine Scheme was particularly designed to improve the safety and quality performance of chemical shipping. The Scheme provides reports on the world chemical fleet and more than 600 ship owners and 3,000 chemical tankers participate (ibid, 2008). If a ship has a CDI-Marine Scheme report, it will be entered into the database of the European Quality Shipping Information System (EQUASIS). PSC authorities and shippers can also access the database to verify previous inspection records on CDI enrolled ships. Although the CDI is not an official organisation, passing its inspections is increasingly acknowledged as a mark of a ship's self-identity symbolising both good OHSM in the company as well as onboard their ships. In this sense passing CDI's inspections has become more and more attractive for many shipping companies, particularly for middle- or small-sized firms.

The OCIMF also has a significant impact on chemical shipping. Founded in 1970 in London, the OCIMF is an oil/chemical industry's voluntary organisation set up in response to public concern over tanker quality and safety standards. As of May 2010, there were 81 members that covered major international petrochemical corporations. The Ship Inspection Report Programme (SIRE) was one of the most significant initiatives introduced to improve safe operation. The Programme is featured by the following inspection protocols: 1) Vessel Inspection Questionnaire (VIQ); 2) Barges Inspection Questionnaire (BIQ); 3) Uniform SIRE Inspection Report; 4) Vessels Particulars Questionnaire (VPQ); 5) Barge Particulars Questionnaire (BPQ); 6) SIRE Enhanced Report Manager (WebSERM) (OCIMF, 2010). Based on the inspection standards listed above, the system has created a large database in which the latest information about oil/chemical tanker inspections is recorded. In 2009, the database stored over 22,500 reports on over 8,000 vessels that received inspections. The data is of significant value for members of the Forum as well as other interested parties in this industry. SIRE information is available to maritime administrations of port/flag states. This system is unique in its contribution to providing a high level of transparency in terms of the status of ship's management and maintenance.

As the major actors in the supply chains in the chemical shipping industry, the inspections and audits conducted by CDI and OCIMF have significant impacts on the OHSM practices of trading companies. For example, if a company fails an oil major inspection, the oil major will not allow the ships of the company to transport its cargo. The consequences are that, on

the one hand, this could potentially improve the OHSM of the companies and play a constructive role in delivering best practices in safety standards to achieve safer shipping. On the other hand, it could also lead to a coalition of interest between managers and employees to disguise health and safety issues because of the threat of loss of contracts from major customers such as the oil majors in this study.

The relevance of these organisations for the ship operators and crews in the present study will be discussed in the following data chapters and discussion chapter.

4.2.4 The Pattern of Chemical Trading and Its Impact on China

It has been well recognised that the structure of trade is influenced by the shift in location of the world's production capacity. Over the past several decades in parallel with the development of the world economy, there have emerged new trends in trading patterns and the global mobility of production (Held *et al.*, 1999). The pattern of exporting /importing products from one country to another has been shifting away from raw materials to more refined products since the 1960s (O'Brien *et al.*, 2000). In the chemical industry the increasing distribution of chemicals to underdeveloped and developing countries partly provide an explanation for this new trend of development. In particular new investments in chemical manufacturing have been shifting from the west to the east of the world in recent years (Yuan and Fei, 2008). According to Yuan and Fei (2008), one such shift was to the Middle East region with its easy access to rich and cheap resources; another was to the booming Asia market with its tremendous demand and huge growth potential. Particularly notable was the shift towards the markets in India and China (ibid). These changes in the trading patterns have a significant influence on the relocation and redistribution of chemical production. A brief introduction to the development of the Chinese chemical industry will help us to understand the situation behind the development of the chemical shipping in China.

Since the 1970s when China opened up to the outside world, a fundamental transformation occurred, making China one of the world's fastest-growing economies. To a great extent, its remarkable growth has relied on chemicals – major upstream products for manufacturing – and overseas markets. According to a report made by ExxonMobil (2007), chemical demand in China was increasingly robust, and it will account for about 25 percent of the global demand for key commodity petrochemicals by 2015.

The increasing demand for chemicals has facilitated the production of chemicals in China. The large-scale, state-owned enterprises play key roles in the supply of petrochemical products. Presently, there are four leading oil and petrochemical giants in China, i.e., China National Petroleum Corporation, China Petrochemical Group, China National Offshore Oil Corporation, and Sinochem Corporation. As part of China's obligations to the World Trade Organisation (WTO), the chemical business in China has been deregulated over the past ten years. This has also encouraged foreign investor's participation in Chinese chemical manufacturing sector. Apart from the state-owned companies mentioned above, foreign investors have participated widely in the petrochemical sector since 2001. The world's leading five energy corporations, BASF (Germany based), Dow (US based), ExxonMobil (US based), Shell (British-Netherlands based), and BP (UK based) have been more heavily involved in the chemical manufacturing industry. Statistics from the *Shanghai Shipping Exchange* (SSE, 2007) showed that the accumulative cargoes produced by recent new chemical projects have increased by more than 3 million tons in 2007, among which the majority were estimated to be from the newly launched, high-end petrochemical join ventures.

Recent investments in chemical production in China were typically clustered in port cities where it was convenient for shipping. For example, China Petrochemical Group launched new plans to build ethylene plants in Tianjin, Zhenhai, and Guangzhou, and Nanjing (SINOPEC, 2008). Other large chemical joint ventures in China such as the BASF-Yangtse Ethylene project in Nanjing (2006), ExxonMobil's investment in Quanzhou (2008) and Shell's joint venture in Huizhou (2008) are all located in port cities. The relocation of chemical manufacturing bases also contributed to changes in the trading patterns in the region. In the past, about 70-80 percent of chemical products in China were imported from foreign countries; in recent years there appears to be more exports to other countries in the Asia region (Zhang, 2005).

Chemical transportation by sea is directly related to chemical production worldwide. The rapid development of chemical production in eastern countries such as China has provided new opportunities for chemical tanker operators. The significant implications for the development of the chemical shipping industry in China are introduced in the following section.

4.2.5 The Chemical Shipping Sector in China

The development of the chemical tanker fleet in China can be dated back to the early 1980s. Shanghai Shipping Agency, a state owned company, bought a 3,860 DWT chemical tanker from Japan in 1983, which set a precedent for chemical shipping in China. In the past decades, the development of chemical fleet has been growing slowly, partly because of the technological sophistication, high cost of these ships and fierce market competition which refrained Chinese ship owners from fast expansion of their chemical fleets. However, this situation had not been changed until chemical production in China started booming at the turn of the 21st century. The shift of petrochemical manufacturing bases to China has created tremendous demand for shipping since 2000 (Hu, 2008).

Given the strong demand for chemical shipping, the growth of the chemical fleet in China was not significant. Although statistics showed that Chinese-controlled fleet has been expanded dramatically over the past decade (UNCTAD, 2007), the scale of the chemical fleet has been increasing slowly. The scale of the Chinese chemical tankers fleet is small in comparison with giant chemical tankers companies in Western Europe and America. The total number of chemical tankers is '173, amounting to 336,000 DWT' and the average ship's age is 12.7 years (CMSA, 2007, p.22). Besides, there were 79 newly-built chemical ships (330,000 DWT in total) to be launched by Chinese ship owners in the following year (ibid). These new ships are much bigger than the existing fleet in terms of its average DWT, probably owing to the market demand and ship owners' considerations of economy of scale.

Under the context of the growing demand for chemical shipping, in recent years the Chinese government launched a strategic plan with an aim that domestic cargoes be carried by China's own national fleet. Meanwhile, some preferential policies were launched in order to facilitate the development of Chinese chemical fleet. One of the typical examples was that the Chinese government has removed the regulatory barrier to foreign investors, allowing them to co-establish joint ventures with Chinese chemical tanker companies. The only restriction is that the share invested by foreign parties should not exceed 50 percent of the overall investment (Zhang, 2005). Following this policy, there emerged new joint ventures in chemical shipping industries. Although there were some negative impacts on chemical shipping following the financial crisis in 2008, it seems that the continuous

increase of chemical production capacity will mean the continued expansion of the chemical tanker fleet in China in the long run.

4.3 INTRODUCTION TO THE CASES

In section 3.3.2, the choice of the two company cases was justified. This section introduces the two cases in order to better understand the parties involved in communication between shore departments and their ships. It is limited to a brief explanation of the company's basic information, its safety policy and objectives and its structure and functions relevant to the research topic.

4.3.1 Company 1

Company 1 (C1) is affiliated to its Group Company. The Group Company is a listed company dedicated to oil and chemical transportation. In the Group Company, the there are three separate fleets: the fleet carrying ocean-going crude oil; fleet carrying international clean oil products; and the fleet carrying chemicals, liquefied gas, and asphalt. By the end of 2010, the Group Company owned about 50 vessels of various types with a total capacity of about 2 million DWT and annual carriage volume of more than 30 million tons.

C1 was established in 1994 by its Group Company and a domestic petrochemical company located in the same region. Since 1997, when the Group Company was listed, the chemical fleet has been expanded significantly. It became the largest chemical tanker company in China in early 2000s. After that, C1 experienced several years of stagnation in its development owing to unexpected loss in its business. In 2006, C1 became a subsidiary fully controlled by the Group Company.

The company has kept adjusting its fleet since its foundation. New ships were introduced while old ships were sold off. By the end of 2010, the company owned about 15 chemical tankers. There are two large size sister ships with a tonnage of more than 12,000 DWT and the rest are all medium size ships, with the smallest one about 3,000 DWT. The majority of its fleet is IMO type II tankers with cargo tank coating materials of epoxy resin, phenolic resin, or polyurethane so that ships meet the requirement for carrying different types of chemicals. The cargoes carried cover a wide range of categories, for example, those derived from aromatics, esters, acids and aldehydes. A few IMO I tankers with pure stainless steel cargo holds have been bought in recent years. These ships are able to carry extremely toxic

cargoes with highly demanding storage conditions such phenol, which I saw on S1 before my sailing began. Presently, the majority of the ships were built after 2000. The fleet was mainly registered with Chinese nationality, although a few were registered in Hong Kong. The major trading areas are in west Asia Pacific region. The two ships I sailed were registered in China and they mainly sailed in East and South East Asia.

The Policy and Objectives of OHSM

C1 set up an OHSMS when the company was founded. The system was independent from that of its Group Company. The system has been revised several times even since and the present version has been in operation since the end of 2008. The system was named as 'Quality, Safety and Environment Management System' (QSEMS) in accordance with the ISM Code, NSM Code, ISO 9001:2000 and ISO14001:2004. In addition, the System considered the standards from OHSAS18001, TMSA (Tanker Management and Self Assessment Guide) and VIQ. The QSEMS is regarded as a statutory document in which the company's OHSM policy, corresponding objectives and management commitment are clearly stated. The safety policy statement of the company is 'Human Oriented, Quality Service, Environment Protection and Safety Ensurence'. In order to quantify and measure the achievements of the safety policy, the company accordingly laid down detailed objectives. They had a wide coverage which included its service quality, safety and environment protection, customers demand, scientific management and continuous improvement etc. All the objectives shall comply with the standards of international conventions, national legislations, and industrial guidelines. In line with each of these objectives, there is an affirmative statement or numerical value attached for the purpose of measurement and assessment. Key items are summarised in Table 4.

Table 4: The Objectives of OHSM (C1)

Management Objective	1) to provide safety practices and safe working environment for ship operation; 2) to take preventive measures to deal with identified risks; and 3) to continuously improve ship shore personnel's safety management skills and safety and environment protection emergency reaction capability.
Safety Objective	No significant accidents, aiming at zero accidents and zero

	pollution.
Environment Protection Objective	All discharged liquids should meet the standard set in the MARPOL[viii].
Inspection Outcome Objective	Rate of ship detention by PSC: zero; rate of passing oil majors inspection: 90%.
Health Objective	Rate of casualty is zero; work-related injury is no more than one.
Customer Satisfaction Objective	Less than two claims or complaints.
The Ultimate Objective	To achieve zero accidents, zero pollution through thorough implementation of the QSEMS; and To ensure safety at sea, prevent casualties, and avoid ocean environmental pollution and loss of property.

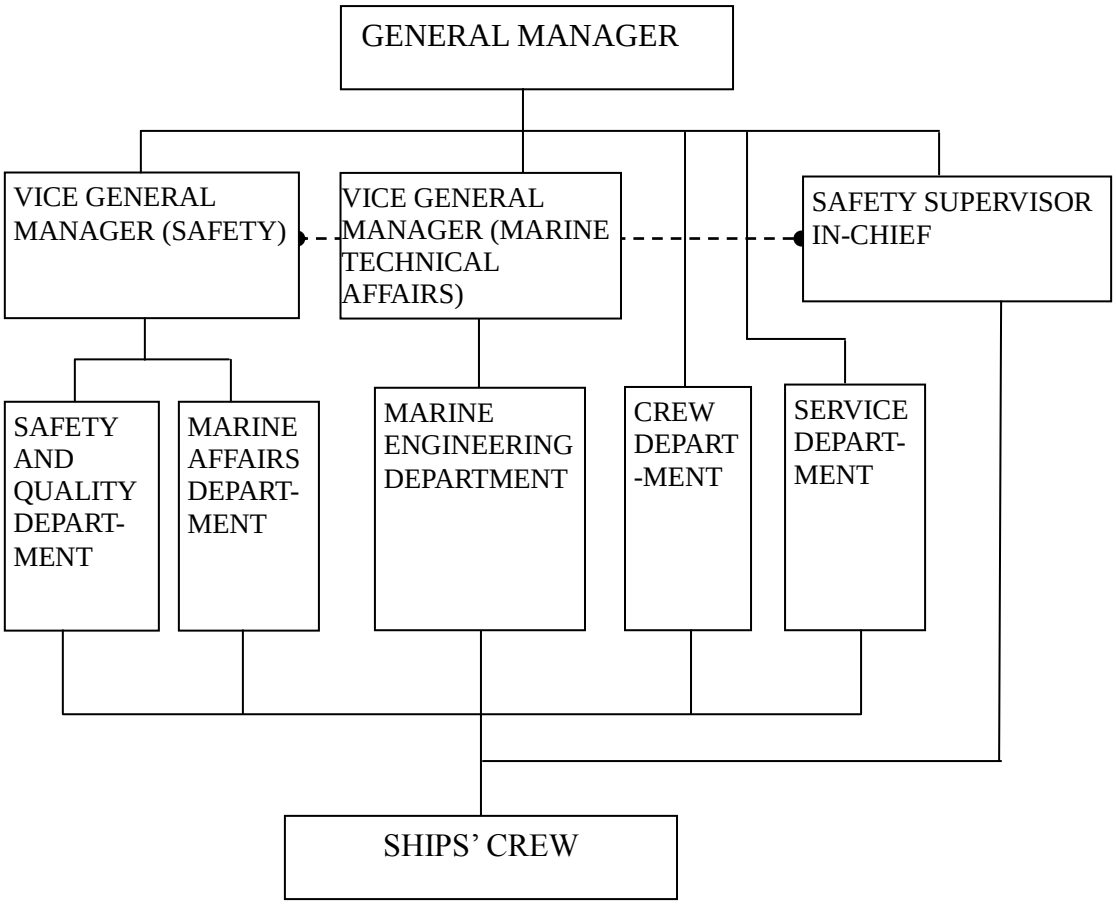
According to the vice general manager in charge of safety, all the ships in C1 passed the inspection from at least one of the oil majors and international industrial organisations such as BP, Shell, and CDI. The company claims to have a sound organisational structure, and a group of experienced senior managers and professionals. The company has kept good records on safety, environment protection, and service quality. The company has never had some major ship damage or marine engine damage accidents, ocean pollution accidents and personnel casualties. Although the management did not provide me with the formal records in relation to the reported incidents, injuries compensation payments etc., an overall impression of my field work in the Company showed its strong commitment towards effective operation and continuous improvement of their QSEMS so as to achieve the quality, safety and environment protection objectives stated above.

The Structure and Functions

To better understand the structure of the company, its organisational chart is given below (Figure 2). To be noted, in consideration of its relevance, the financial department was omitted on the chart. Also, the business (cargo canvassing) department was not shown on the chart, since all the cargo canvassing work was done by its Group Company. The major responsibilities at each level are summarised hereafter.

[viii] International Convention for the Prevention of Pollution From Ships

Figure 2: The Organisational Chart (C1)



General Manager

The general manager presides over all work in the company. He is fully responsible for setting up the organisational structure and the function assignment for each of the sections (units). He takes the leading role in establishing, approving, implementing, and reviewing the QSEMS. He is the key person for providing efficient resources for the operation of the system, as well as for providing qualified personnel, a good work environment and needed training.

Vice General Manager (Safety)

The vice general manager (safety) is in charge of marine affairs, as well as safety management in the company. In this company, he is also the safety supervisor in-chief, equivalent to the designated person stipulated in the ISM Code and is the manager's representative in the ISO9001:2000 and ISO14001:2004. He is responsible for monitoring the operation of the company's QSEMS; for ensuring that ship-shore communication

channels are open and clear; for providing ships with sufficient resources as well as shore support; and for making sure of the effectiveness of quality, safety and environment related management activities. He is the immediate leader of the safety and quality department and the marine affairs department.

Vice General Manager (Marine Technical Affairs)

The vice general manager is in charge of marine technical affairs for the company (ships). His responsibilities mainly include the organisation of ship's maintenance and repair and the control of its quality. He is also responsible for monitoring whether the shore-based support to ships is in place. He is the immediate leader of the marine engineering department.

Safety Supervisor in-Chief

The safety supervisor in-chief is responsible for safety management of ships as well as shore officers. As mentioned, the vice general manager in charge of safety also plays this role in OHSM. He is responsible for establishing communication channels between company's senior management and the ships; for organising ship visits and safety inspections; for ensuring resources and personnel in place in safety and anti-pollution activities; for responding and verifying major non-compliance events, for internal and external audits; for organising investigations into accidents and near miss cases; and for verifying the effectiveness of corrective and improvement measures.

Safety and Quality Department

The department takes the major role in drafting and revising the QSEMS; for designing the ship-shore QSEMS monitoring inspection syllabus and checklist; for organising company's ship-shore internal and external audit; for safety information collection and dissemination to ships; for locating crew responsibilities for non-compliance, accidents, and near miss cases; for organising cause analysis and verifying effectiveness of follow-up measures; and for investigating and analysing customer claims and levels of satisfaction.

Marine Affairs Department

The marine affairs department is responsible for the safety on deck department onboard ships. The department is responsible for organising guide captains to inspect, supervise and instruct crew's shipboard safe operation, as well as cargo safety operations (including

awareness of cargo features, cargo tank washing quality, risk assessment, and the use of safe working protective devices etc.); for providing support to safety related problems onboard ships; for contacting and coordinating oil majors inspections; for participating in incident investigations; and for evaluating captains' and officer's work and making suggestions about crew arrangements.

Marine Engineering Department

The marine engineering department is responsible for organising chief engineers to conduct safety inspections and supervision onboard; for auditing ship's maintenance plans and arranging ship repairs; for monitoring the supply of ship's spare parts onboard and giving sufficient resource support; for giving guidance to ships for receiving external inspections from port states or oil majors; for participating in the investigation into marine engine/electrical apparatus damages, pollution incidents/accidents, near misses, and giving remedial measures; for analysing ship's fuel consumption data and proposing fuel consumption saving rewards to crew; for appraising engineers' performance and giving suggestions about engineer officers' arrangement on a ship.

Crew Department

The crew department is responsible for making out annual crew demand/supply reports, and drafting crew service contracts; for drafting plans for crew leasing, dispatchment, promotion, training (including on-the-job training), as well as their performance evaluations; for implementing crew salary distribution policies and auditing crew's boarding wages; for workplace safety management, onboard medicine arrangements and supply, crew alcohol and drug tests, and crew shore leave.

Service Department

The service department is responsible for the company's daily administrative, logistic and safeguarding issues. Typically, the department is responsible for dealing with the so-called 'red-headed document' (the administrative order). To some extent, the role of this department is like the secretariat of the company. The department is also responsible for doing work-related statistics; for drafting the company annual work plan; for procurement of ship's supplies and spare parts; and for performance appraisals of shore-based staff and salary issues.

Crew

The seafarer's branch company of the Group Company was in charge of selection, recruitment and management of all the seafarers for manning the whole fleet. According to the crew manager, C1 did not directly recruit seafarers from the seafarer's labour market. The seafarer's branch company was responsible for the supply of a fixed amount of seafarers to C1 as a package deal. Therefore, C1 did not need to sign any contracts with the crew. The supply of the crew depended on annual estimation of the demand for its fleet. Currently the number was about 300. C1 had independent power over routine crew management. Based on the company's crew management rules, the average working period onboard was between 6 and 9 months. In C1, the crew team was comparatively stable. The company tries to fix individual crew members on a particular ship, if that individual's work performance was positively appraised by the company. Some of the crew did not change ship and have been working together for several years.

In terms of their responsibilities in OHSM, each of the crew has corresponding responsibility to comply with operational instructions and procedures as stated in the OHSMS. In general, crew are obliged to report to shore management whatever occurs onboard ship that has implications for OHSM. In particular, the crew should collect and report safety related problems to shore management according to reporting procedures. In addition, for the purpose of continuous improvement of the safety management, crew should be consulted to get their participation into the process of OHSM.

4.3.2 Company 2

Company 2 (C2) is one of the subsidiaries of its Mother Company. Apart from C2, the Mother Company also owns one ship-building company and one ship-repairing company located in the same region. The Mother Company was co-founded by a few strategic investors. C2 was established in 2004 when its first ship was launched. Most of the ships in the company were built by the shipbuilding subsidiary of the Mother Company. The average age of the fleet in C2 was rather new. The smallest ship is about 2,000 DWT, while the biggest one is about 15,000 DWT. At the end of 2010, there were about 15 chemical tankers in operation totalling over 74 thousand tons (DWT). The middle-sized ships were placed in western Asia Pacific region, while a few large-sized ships were operated globally. All the ships belong to IMO type II chemical tankers. There were several tankers with stainless tank holds, while the rest were coated with either zinc silicate or epoxy resin.

There are several ships registered with foreign nationalities and the rest are all registered under Chinese nationality.

The company has stable cooperation with some of the major international well-known petrochemical companies. A majority of its ships passed external inspections from oil majors such as BASF, Shell, BP, Exxon-Mobil, Lucite and Dow Chemical. A few of their ships have passed the CDI inspections at higher scores. The Company is said to have a leading position in this specialised industry in China. Although the company experienced a short downturn period in the chemical shipping market in 2008, it has been out of the shadow of the financial crisis since 2009.

The Policy and Objectives of OHSM

The company had an OHSM system in place since its establishment. The company has passed the ISM as well as NSM verification since its foundation. The management system was named as Quality and Safety Management System (QSMS). It was asserted that C2 dealt with OHSM on its fleet seriously with an aim to provide the best services to its customers. Its OHSM policy statement is: 'Safety, Health, Environment Protection and Servicing'. In order to better and thoroughly implement this policy, the qualifications of the shore personnel at managerial positions were particularly considered. The majority of the managers and superintendents in the company are experienced captains or engineers, or had experience working on the ships of the company. Guided by this policy, the company promised to provide ships with safe practices and a safe working environment. On the basis of its normalised, programmed, documented and professionalised management, the company pledged to ensure personal OHS, safety of ships and properties, and to comply with statutory requirements, customers' demands and industrial standards (such as oil majors and CDI). The company agreed to motivate its staff, to promote sea-shore personnel safety management skills, including their contingency reactions for ship's safety and environment protection. Similar to C1, this company broke down its general policy statement into quantified annual objectives. The objectives are extensions to the original statement. These objectives are illustrated in Table 5.

Table 5: The Objectives of OHSM (C2)

Health Index	The personal casualty rate: LTIF[ix]<=2.0; TRCF[x]<=4.0;
Safety and Environment Protection Index	Average Loss: no occurrence of average level accidents; minor incidents <= 2/Annum Machine Damage: no occurrence of average level accidents, minor incidents <= 2/Annum
Environment Protection Index	All the discharge operations should comply with the MARPOL and IBC Code[xi], No occurrence of average level pollution accidents, minor incidents<= 2/Annum
Cargo Damage Index	Cargo damage/short landing incident rate <= 2 (times/total voyages)
Safety Inspection Index	PSC/FSC inspection detention rate: zero; industrial inspection pass rate: ≥90%
Customer Satisfaction level	≥90%

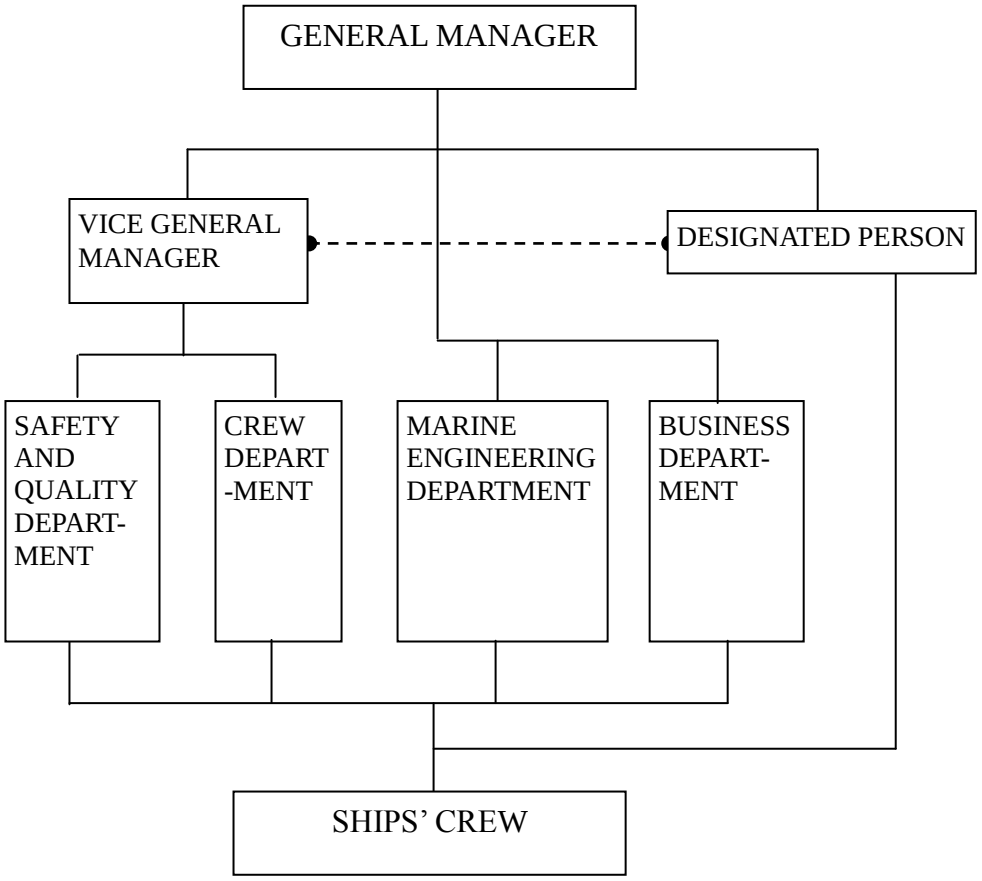
As explained by a senior manager in the company, safe shipping and customers' demands were the two pillars that underpinned the company's subsistence and development. On the one hand, the company would try its best to support ships with good working conditions and environment, so that ships could operate at reasonable speeds and fuel consumption levels. On the other hand, the company would ensure punctuality, accuracy, and quality of cargo delivery service to meet the needs of its customers. The company would implement the QSMS policy and objectives through work process monitoring, internal audits and management reviews. The company aimed to be one of the most excellent, professional, chemical shipping service providers in order to forge a state-of-the-art brand in the Chinese chemical shipping industry.

The Structure and Functions

The organisational chart in C2 is shown below (See Figure 3). The key functions of this organisational structure is summarised in the following paragraphs. In consideration of its lack of relevance, the financial department is omitted.

[ix] Lost Time Injury Frequency
[x] Total Recordable Case Frequency
[xi] International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

Figure 3: The Organisational Chart (C2)



General Manager

The general manager has the decisive power to determine the organisational structure, position set-up, staff salary grades and annual rewards. He is the key to establish, implement and maintain the OHSMS. He is responsible for providing sufficient resources and shore-based support to the various departments and ships to guarantee the safety of life, property and marine environment and also audits and approves each ship's charter party and crew leasing contracts. He is obliged to require relevant departments and ships to investigate and analyse non-compliance items, incidents/accidents and near misses. In case of emergencies, he becomes the general commander of the emergency group.

Vice General Manager/Designated Person (Management Representative)

The vice general manager also takes the role of a designated person as stipulated in the ISM. He is directly responsible to establish, monitor, audit, appraise, review and improve the OHSMS. As a channel of communication between ship and shore, he is obliged to organise

and carry out ship visits when necessary. He is the decisive person for the establishment of a crew team which services the company's fleet. He implements the company's crew reward and punishment schemes. He is fully responsible for marine affairs safety management and ensures measures for passing PSC/FSC and industrial inspections, such as the oil majors inspections and certifications of compliance. He is the immediate leader of the safety and quality department and the crew department.

Safety and Quality Department

The safety and quality department is responsible for organising and implementing annual internal audit plans and receiving external audits; for coordinating with the marine engineering department to supervise ship maintenance work and conduct safety inspections onboard ships; for tracing ship sailing routes and position, and auditing ships reports and giving feedback; for collecting and disseminating safety information to ships; for providing ships with technical assistance and necessary resources on marine affairs. The department is obliged to ensure that ships can pass PSC/FSC safety inspections and various industrial inspections. The department is required to participate in the investigation of non-compliance, accidents and near misses cases. Also, the department is required to participate in the process of crew selection and their performance appraisals.

Crew Department

The crew department is responsible for exploring the crew market and for maintaining good relations with crew agencies; for crew interviewing, recruitment, training and their performance appraisals. The department is required to recruit competent crew and arrange necessary training to ensure they can adapt to the company's management system. The department is also responsible for implementing the scheme for rewarding good performers and punishing bad ones; for crew work attendance statistics, salary, bonus and medicine supply. The department has the right to dismiss contracts with crew when evidence of incompetency (or fault) is confirmed.

Marine Engineering Department

The marine engineering department is responsible for monitoring the implementation of the management system in the engine room department of a ship; for ship visits in collaboration with the safety and quality department; for assessing ship's reports and giving feedback about them; for providing sufficient resources and shore based support to ships;

for the arrangement of ship repair and fleet maintenance work; for purchasing and supplying consumables to ships; for ensuring ships pass PSC/FSC and industrial organisation's inspections; and for taking necessary measures to control environment pollution and the risk of marine engine accidents. The department is required to participate in the process of ship engineers' selection and giving them proper training and performance appraisals.

Business Department

The business department is obliged to carry out surveys on the international and national chemical trade market and is also responsible for the development and maintenance of clients. The department gives guidance for ship cargo handling, tank washing and procedure monitoring; for business negotiations with the charterer, contract review and implementation; for risk control in the business management in cases of short landing, freight rate disputes, demurrage and bill of lading issues; for giving responses to cargo owner's consultations and complaints to provide satisfactory services to customers; and for selecting competent agencies and other related service-providing contractors in foreign or domestic ports.

Crew

In C2, the crew department is in charge of crew recruitment from the domestic seafaring labour market as well as their routine management. According to interview data with the crew manager, there are from 250 to 300 crew registered and working for the company, among whom about 15 percent of them are directly employed by the company. This portion of the crew have longer contract terms (usually 3 or 5 years) with the company. Some of them can even buy internal shares and receive annual dividends from the company. For the recruitment of the crew with short-term contracts, on the one hand, the company outsources a package deal to manning agencies; on the other hand, the company also directly recruits individual free lance seafarers from the labour market. Some of them are introduced by those who have worked in the company before; some by crews own voluntary contacts, and some by internet advertising. For the short-term contract crew, they work on a one-off contract. The contract term is usually 6±2 months for officers/engineers, 10±2 months for ratings.

In terms of crew's responsibilities in relation to OHSM, it is found that there is no

significant difference from those stated in the end of section 4.3.1. Thus, they will not be repeated here.

4.3.3 A General Assessment

This brief introduction to the two companies shows that they share many similarities. Both companies established OHSMSs in response to the requirements of the ISM Code. They shared some common features in terms of their policy and objectives of OHSM. Both companies had a clear, concise and indubitable safety policy, which was further quantified by a list of indices or concrete criteria. While their policies and objectives were unquestionable, a careful examination showed that the OHSM objectives entail a strong incident/safety focus rather than a health exposure emphasis. Given the nature of the industry being studied there are potentially considerable health risks for the crew in a pervasive, chemical environment. In this regard, the over-emphasis on safety rather than employees' occupational health was similarly acknowledged in the OHSM literature, this being symptomatic of many OHSMSs (Hale *et al.*, 1998; Gunningham and Johnstone, 1999; Bornstein and Hart, 2010). The consequence is that the observance of operational procedures outweighs the care for occupational health, and may undermine the real value of OHSM (Haines, 1997).

Both companies have established steady relationships with several multinational chemical producers such as BP, Shell and BASF as described in section 4.2.4. Their business and the number and size of ships are also comparable. In both companies the shore managers and superintendents were mainly ex-captains or ex-chief engineers. They were chosen to work in shore offices, since they were exceptional and experienced in their professional areas.

Given that many similarities can be found in both companies, there are some noticeable differences. The history of C1 was longer than C2. C1 was supported by a state-owned Group, and C2 was formed by several strategic investors. But, these differences had little effect in terms of the focus of this research. Although the organisational charts are structured slightly differently, a detailed examination shows that they share many common features. In terms of crew's employment, the crew in C1 were mainly supplied from the seafarers' branch company of its Group Company, while the crew in C2 were mainly employed from the Chinese seafarers' labour market, such as those from crewing agencies. This difference will be considered in the data chapters.

In general, the introduction and comparison of the two companies help us understand the typical organisation structures present in the chemical shipping industry. The chapter gives a sketch of the major departments of shore management that communicate with a ship's departments and crew. Designated person(s) acting as a communication link between senior management and ship's crew, as specified by the ISM Code, were identified. This introduction to their responsibilities help us locate where major issues of communication between shore management and ship's crew might arise, the main focus of this study.

4.4 SUMMARY

This chapter first reviewed the literature about the chemical shipping industry. The review included the types of chemical tankers, the development of the chemical fleet in global as well as domestic Chinese markets. To better understand chemical shipping, the major industrial players and the pattern shift of chemical trading were also noted. Following the review of the chemical shipping literature, this chapter also introduced the basic facts of the two companies selected for my study. The introduction included both companies' basic information, policy and objectives of OHSM, and their structure and functions. Since the main focus of this study is shore-ship communication, the introduction to the responsibilities of both shore departments and officials and crew give an understanding of the roles managers and crew are responsible for in their communications relating to OHSM. Following the introduction of the two cases, a general assessment on the differences and similarities of both companies was given. They are useful for explaining the different perceptions of the crew in the two companies in terms of their communication of OHSM matters. On the whole, the introduction of this chapter helps readers understand the industrial and corporate background of this study.

CHAPTER 5 (SHORE-TO-SHIP) COMMUNICATION FOR WORK SUPPORT

5.1 INTRODUCTION

This research aims to explore the role of shore-ship communication in influencing shipboard OHSM in the two chemical shipping companies. In section 2.5, the main purposes of management-employee communication in relation to OHSM are clearly stated. For the management, the main purpose of communication with employees is for the provision of organisational support to employees as well as management control over workplace OHSM. For employees, the main purpose of communication with the management was safety reporting as well as employee consultation. The following four data chapters will present the preliminary findings of the study on shore-ship communication for those purposes in the Chinese chemical shipping industry.

First, in order to achieve the objectives of organisational OHSM, one of the major responsibilities for the shore management is to communicate crew in order to provide adequate work support to a ship's crew. The extent to which such support has been given can be perceived by the communication between the shore management and the ship's crew (see sections 2.5 and 4.3). This chapter first examines the shore management's perception of its support for the crews of its ships. Then, the crew's perceptions of the same support are presented, thus allowing for a discussion of the overall impact of the management's support on the crew and their shipboard OHSM practice.

5.2 THE MANAGEMENT

Communication for the purpose of providing work support is indispensable between the shore management and the ship's crew and helpful for shaping a safer working place on board a ship where the continual occurrence of a variety of maritime risks is considered normal (Anderson, 2003). From the perspective of the shore management in both companies, the communication for such a support played a key role in ensuring a ship's normal operation and in maintaining good OHSM practice. In this regard, management providing crews with support and its responsibilities in solving shipboard problems are presented in this section. Following this, different types of support are identified and briefly outlined.

5.2.1 Operational Support

As discussed in the literature chapter (section 2.5.2), organisational support plays a key role in safeguarding OHSM in routine workplace activities. The communication for such a purpose is closely related to employees' safety performance. In general, much of the literature suggested a potential positive impact of organisational support on the workplace's OHSM.

In a ship's routine operational management, managers and superintendents from marine affairs, marine engineering and the quality and safety departments of the companies were the persons who communicated most often with crews. Their activities in this respect are highlighted in the data, particularly that of the superintendents as the immediate persons to contact crews. The superintendents in both companies were called by a dedicated name. In C1, a marine affairs superintendent was called 'Guide Captain' and a marine engineering superintendent was called 'Guide Chief Engineer', so they were called by the generic term 'the Guide'. In C2, they were called 'General Captain' and 'General Chief Engineer' respectively. The interviews with the shore management showed that they were ready to assist crews whatever and whenever support was needed:

> If we could not give them (crews) support and ships did not need [it], then the Guides (captains/chief engineers) would lose the significance of existence. (Marine Affairs Superintendent, C1)

As mentioned in section 4.3, most of the superintendents in both companies had had several years of sea experience before they took office jobs. Usually, they were ex-mariners, such as captains or chief engineers. They were selected as members of the management according to their recognised competence. In this sense, they were qualified to provide support to a ship's crew. For example, a superintendent commented:

> Relatively speaking, the Guides' competences are high in the company. They could assist crews to identify and solve safety problems on board. It's good for promoting safe production. (Marine Engineering Superintendent, C1)

This support had significant implications for a ship's safe operation. The concern for safety in the chemical shipping industry made special sense given the dangerous nature of the chemical cargoes. In both companies, there were dedicated persons responsible for guiding crews regarding the management operation of chemical cargoes. A manager talked about this special role in the following way:

> The person taking this role is very professional. He has worked on chemical tankers for more than ten years. His role is also valued by the company. It is the highlight in the highlighted areas. We fully support his work. (Marine Engineering Manager, C2)

In addition, as described in section 4.2.3, chemical tankers receive regular external inspection from oil majors such as BASF, BP, Lucide and Shell. These inspection standards are very high. If a ship cannot pass their inspection, they would not let the ship carry their cargoes. Thus, passing such an inspection was crucial for companies' 'business' as well as for their 'reputation', a fact which was repeatedly mentioned by many interviewees. When a formal inspection was scheduled, the management in both companies would usually visit the ship to be inspected. For instance, a marine affairs superintendent said:

> It is to give guidance. Each year, there would be several oil majors' inspections. Before an inspection, we would visit the ship. Something new would have emerged each year…new norms or regulations…We would tell crew the latest requirements from the oil majors, and tell them what to do in order to meet the requirements. (Marine Affairs Superintendent, C1)

Apart from the ship visit, a manager or superintendent might sail with a ship for a voyage. In general, the data suggested that the role of shore support was very important for a ship's safe operation and the oil majors' inspection. In the literature, some different kinds of support in organisational context were discussed by Osca *et al.* (2005), among which the role of supervisory support was highlighted. This study showed a similar situation. The supervisory support was an easy and inexpensive way of improving an employee's work environment (ibid, p.292). From the management perspective in both companies, the study showed definite positive organisational commitment to OHSM on board their ships and they thought their support was indispensable.

5.2.2 Problem Solving

More specifically, it was found that the communication for shore support was centred on solving problems for ships' crews. It is understandable that problems can occur frequently in an organisation and they can emerge repeatedly in routine operational activities in the process of organisational production. The shipping industry is no exception in this regard, as ships operate in a harsh and perilous working and natural environment (Bloor *et al.*, 2000). Although front line employees were in the best position to identify workplace problems, apparently, there would be some safety-related problems that crew could not deal with properly alone. The identified problems usually needed to be solved with the management's support. In such circumstances, the role of the management in problem solving was prominent. As Eraut *et al.* (1998) argue, the development of skills for problem solving was based on a full understanding of the production process within an organisation. Therefore, managers or superintendents in both companies should have been in a position where they

had a better understanding of their organisations, than available to the crews of their ships. Their asserted competence and their control of various resources were essential for dealing with workplace problems. The problem solving could give a crew 'a sense of safety' or 'logistic guarantee', as expressed by some shore interviewees. A manager detailed its role:

> The communication could solve a crew's work-related difficulties… difficulties with the implementation of new requirements from oil majors, the scarcity of equipment, spare parts and supplies... The communication for giving a ship support is significant. (Safety and Quality Manager, C2)

Furthermore, the impact of problem solving could go beyond a problem itself. In a wider sense, it could affect the interest of all parties involved. A superintendent explained:

> It (communication) helps to solve a problem. If a problem is solved properly and smoothly, the ship's schedule can be guaranteed. It is good for personal safety, the ship's safety, the company and also cargo owners. If a ship's (sailing) schedule were delayed because of equipment (failure) or crew capability, cargo owners would have a bad impression of our company. They would doubt our company's good credit. (Quality and Safety Superintendent, C1)

In general, a strong management commitment towards problem solving could be perceived from the data. This could be illustrated by a senior manager's account:

> Whether the support to ships was in place … whether the crew's demand for information, spare parts or materials was supplied in time … we would solve them (problems) as quickly as time allowed. (Vice General Manager, C1)

During my sailing trip on S1 C1, I witnessed a major equipment failure. The cargo pump in starboard cargo tank suddenly broke when discharging phenol in a domestic port in China. When it was reported to the company, several managers and superintendents visited the ship that same evening:

> The pump engine in Cargo tank No 5 could not be started. The emergency plan was worked out after their visit. About 9pm in the evening all of the visitors came to the main deck. The senior officers/engineers were all on the scene. All the crew wore yellow overalls, while the superintendents wore white overalls. One of the superintendents played the role of a commander. An external cargo pipe was equipped with an external emergence pump. It was used to connect the tank on starboard side and the one on port side. By doing so the cargo in the starboard tank could be pumped into the port tank and then discharged through the manifold. The bosun and duty ratings were the main operators. The captain stood aside and the chief officer joined the team to fix the pipe in place with us. I also joined the team for several hours. The workload was significant, and it took several hours to complete the work. (Field Notes, S1 C1, 4 February 2010)

Eventually, the problem was fixed temporarily and the delay to the ship's schedule was reduced to a minimum. A marine affairs superintendent (C1) described this as a typical example of 'communication for decision making and problem solving'.

Apart from the observed management's commitment towards problem solving, a few managers also showed an open and tolerant attitude towards problems that emerged on board ships. For example, a manager said:

> If they (the crew) were to raise some problems, we would give them a response. Even if their queries were unfounded or they made unreasonable demands, we would also give them an explanation. In this way, we try to keep the ships in good technical condition. (Safety and Quality Manager, C2)

From the data, it could be seen that communication for problem solving played a significant role in shipboard safety management in order to ensure a crew's safe working practice on board.

5.2.3 Types of Support

In general, the coverage of an organisation's support was wide. In this study, evidence from the interviews highlighted three areas of support in shore-to-ship communication, namely, technical support, safety information support and material resource support, which all had implications for OHSM. They will be briefly introduced in the following paragraphs.

The technical support aimed to deal with ship's technical problems. These could be technical barriers in relation to main/auxiliary engines, deck machinery, cargo handling or tank washing; problems with the implementation of new industrial standards or regulations issued by industrial bodies, such as maritime authorities or oil majors; or some doubts about the operationalisation of the safety management system or sheltering in adverse weathers such as a typhoon. Basically, the management's knowledge and experience played a significant role in promoting ship's safety management. As mentioned by some interviewees from both shore and ships, their competences were relatively higher and many problems onboard were more likely to be identified by them.

The safety information support was the provision of safety information to the crew which was critical to shipboard OHSM. In both companies, there were dedicated persons in charge of collecting and distributing safety information to ships. The safety-related information was collected mainly via external and internal sources. The external information was issued mostly by external bodies, such as the maritime administrations, PSC or oil majors. For example, during the period of my field work, there was a dedicated focus on life boat safety for PSC inspection. Some related documents were sent onboard. The internal information

was collected from the company's fleet. Where there was a ship visit, some hard copies were provided for distribution among the crew. As soon as a ship received them, they would be dispatched to the crew members concerned. If addressed to all of the crew, they would be posted in the ship's public areas, such as the canteen, lounge or even the smoking room. The purpose was to keep everyone informed about the visit. Also, during the monthly safety production meetings, some of the information would be learnt collectively.

The material resource support was the provision of the necessary materials for ships' normal operations and for crews' OHS protection. They included, but were not limited to, some basic operational tools, crew members' labour protection articles, regular consumables and important spare parts. On some occasions where technical assistance failed, support would involve the renewal or replacement of 'hardware' parts. Also, daily consumables needed to be duly supplied on board ships. A typical example was the consumption of fuel oil or lubricant oil which was also a major concern of the shore management. It was evident that the material support for ships was essential and indispensable in order to ensure their normal operation and management.

As mentioned before, the support was achieved through communication between shore management and a ship's crew. In general, the communication for the provision of the support in the three areas played a critical role in ensuring successful OHSM, without which a ship could not sail safely and efficiently.

5.3 THE CREW

Having presented the management's perspective on providing crews with shore support, I will shift the focus to crews to examine how they perceive the shore support and what are the implications for shipboard OHSM. The previous section identified three types of shore support to crews: technical support, safety information support and material resource support. These will be examined in turn from a crew's perspective. The examination will also include the role of the superintendents as well as the oil majors' inspections in the context of chemical shipping.

5.3.1 Technical Support

The technical support was usually delivered by technical-based communication or ship-visit interaction. Mostly, it happened on the occasions of the management's ship visit. This

sub-section examines a crew's response to the technical support given by the shore management.

Safety Education

Usually, the management's technical support in both companies was provided by managers, particularly by the superintendents. Their positive role was confirmed by many crew members since they were very familiar with the latest maritime policies, such as the revised Safety of Life at Sea (SOLAS) Convention and the oil majors' inspection syllabus, such as VIQ. They understood well many safety-related problems that had occurred on other ships belonging to their company. Some crew referred to them as 'elite' as they had 'profound expertise' or 'unique competence'. For example, a junior officer described the role of a superintendent as follows:

> He could be a superintendent, which means he is very professional. Regarding some deficiencies, we might not be able to identify them. He would know once he came. He would have experienced various inspections many times. He would rely on his experience to tell us. (3O, S1 C1)

In other words, if they were incompetent, they might be guided by others – they could not stay long in this position to manage ships. The role of superintendents in maintaining effective OHSM was also mentioned in Bhattacharya's study (2009). Their seafaring background was helpful for them to deal with an organisation's health and safety issues (ibid, p.160).

The role of technical support was seen most clearly during ship visits by managers or superintendents:

> He brought some cases to us; these included new safety standards, good safety practices from other ships etc. He would communicate with us and teach us. Although they would come for an inspection, they would teach us something new. (CO, S1 C1)

A superintendent's role in 'guiding' a crew was particularly highlighted in the shipment of extremely toxic chemical cargoes, which was observed during my field work on S1 C1. The ship was discharging phenol when I was on board. This chemical is extremely toxic and corrosive; it is also extremely expensive. It would be catastrophic if there were any cargo damage (pollution). The ship had undergone a recent crew change. During the cargo operation, a superintendent visited the ship. He was accompanied by a bosun who had worked on this ship before. My field notes detailed my observation of their work:

> The bosun came onboard together with the Guide captain to give assistance to the

> ship (particularly cargo) operation. In the evening I shared a cabin with the bosun. He was very busy the whole evening and could not have a talk with me. He came back to the cabin at 0.30am. At about 6am the next morning somebody knocked at the door and the bosun was out again. Later I had a short talk with him during breakfast time. He said he had worked on this ship for more than one year. He knows this ship very well and the new crew members (bosun and ratings) could not act in the ways he could. Also, because this cargo was extremely toxic, the company asked him to visit the ship and give assistance. He and the Guide captain left the ship later when they saw that everything was working properly. (Field Notes, S1 C1, 3/4 February 2010).

Several days later during the voyage when I interviewed a rating on board and asked how their visit could help, he replied:

> We learned some (experience). For example, it is easy for the phenol to be solidified and crystallised. In order to ensure the valve does not freeze, a special adjusting washer needs to be fitted. The warming bypass system should also be checked in advance. If there were a sand hole (in it), it would be catastrophic. (Rating, S1 C1)

Some crew members referred to such technical support as 'safety education', by which the knowledge and practice could be transferred to the crew during a ship visit. The role of safety education was also highlighted in the literature. In the Chinese construction industry, research has shown that safety education contributes to workplace safety management (Fang *et al.*, 2004). The research conducted by Aksorn and Hadikusumo (2008) revealed that safety education was one of the critical successful factors that influenced safety programme performance in Thai construction projects. Similarly, this study showed the importance of on-site safety education on board ships since many crew members agreed that self-identification of the problems with their work was difficult. Instead, the problems could be more easily identified by a superintendent in the light of their well-established professional knowledge and skills. In this sense, a superintendent's guidance could have a helpful impact on a crew's operational practice on board. For example, a junior officer said:

> We are used to our own way of working. The problem is that we never think our practice is wrong and never have doubts about it. If he (a superintendent) came, he could point out what was wrong. The problem might be found out by external inspectors if it still existed. Certainly, it is good for us and we can change to the right way. (3O, S1 C1)

Apart from those examples described by officers, a few ratings also offered some similar examples, particularly for those with limited sea experience. During a ship visit, a superintendent would be able to observe a crew's work *in situ*, and there would be a chance to improve the crew's working practices:

> In the mooring operation, I used to put a mooring line on a bollard in a clockwise direction, but the superintendent told me to do it in an anti-clockwise direction. (By

> doing so), it would cause less tension, and would be less likely to hurt operators. I had never thought about that before. (Boson, S4 C2)

Furthermore, some crew members, though not many, commented that they would consult with a superintendent if they were not clear about some professional knowledge. This was especially true in consideration of a wide range of chemical products to be carried by chemical tankers. In addition, most chemical cargoes have different physical and chemical features, and it is impossible for crew members to be familiar with all of them. In such a case, a superintendent would be the right person to consult:

> Last time, the cargo was PX (pxylene). Its solidifying point is 13.3 degrees Celsius, while the environmental temperature was around zero. I was very concerned about the ship's warming system. I asked the superintendent, and he told me (how to deal with it). (CO, S2 C1)

Regarding daily routines, there were not many doubts about when the superintendent would need to be consulted; however, a superintendent's role became prominent in dealing with 'new problems', 'extraordinary conditions', or 'new regulations', as illustrated by some crew members. Given this positive role, not all crew members were satisfied, as will be discussed next.

Limited Supporting Role

The study also found that, for some crew members, the communication with the management did not help much in their work. First of all, some crew members thought that ships were very varied; the 'particularity' of each ship's work environment might be unfamiliar to a superintendent. In this sense, it could reduce the management's supporting role. For example, as one senior engineer put it:

> Except in the case of a superintendent having worked on this ship before and being very familiar with this ship … otherwise, he has to listen. In practice, all the work is done by this ship's crew. (2E, S3 C2)

Some crew members also thought that even if a superintendent's technical support helped, it could not extend to each position across the shipboard hierarchy. Besides, some senior crew members with some years of sea experience thought they did not need a superintendent's technical support. For example, a senior engineer said:

> If you expect them (superintendents) to solve any particular technical problems, it is useless. Mainly, it depends on our own (knowledge). I have been a chief engineer for six years. It's very rare that shipboard practical problems have been solved by a superintendent. (CE, S2 C1)

Furthermore, some crew members were very confident about their competence in problem

solving. They thought they could meet the challenges of various technical problems. Thus, they thought the company's support was of little use, and they would not 'bother them' much. For example, a second engineer said:

> For me, they (superintendents) are useless for helping my work. If I can solve (a problem), I do not need their guidance; if I cannot, they would not be able to work it out either. (2E, S1 C1)

It emerged from the data that the crew's experience and competence could play an important part in shipboard OHSM. In the literature, the crew's experience and competence were seen as part of their professionalism, which further contributes to the safety culture in a shipping organisation (IMO, 2002b). In this sense, the company's supporting role was limited given the crew's professionalism. Meanwhile, some crew members also commented on what kind of support was really 'useful':

> We need them (superintendents) to harmonise work … the types of spare parts, the information and technical documents ... All these should be provided by them. We do not have any channel to obtain them. I think this is most helpful for us. (2E, S2 C1)

Among the various kinds of support that were thought helpful, the arrangement of technicians for repair work, the provision of safety information, and the supply of materials or spare parts were highlighted by crews. The data presented in this sub-section showed that the role of communication for technical support was limited. Some crew members felt that they were educated by the management of the company, particularly during a ship visit. For some others, the role of the management remained weak. What most crew members emphasised were the various logistic services provided by company's management. They were termed a crew's 'real need', which will be discussed below.

5.3.2 Safety Information Support

One of the major duties for the management was to provide safety information support to crews on board. Such support was achieved mainly through technology-based communication modes, such as email or telex. In general, safety information played a unique role in ensuring a ship's routine safe operation and management. Its role became more prominent within the onboard environment, where information accessibility was still 'limited and occlusive' (Marine Engineering Superintendent, C1), given the availability of modern maritime communication technology. Therefore, a shipping company needed to provide its ships with fully updated safety information. The purpose was to equip crews with specific safety knowledge, as a result of which crews' OHSM capability could be improved. This type

of safety information support has been equally highlighted in other safety critical industries, such as health care (Amery, 1999) and road transport (Torrent-Moreno and Mittag, 2009) where it is seen as crucial for the management of workplace health and safety activities. This section examines the role of communicating safety information in influencing a crew's safe working practice.

Learning Lessons

The data suggested that a majority of crew members thought the safety information distributed by their company was very important for the ships' safety management. Among the safety information, the role of negative events, particularly incident reports, in influencing shipboard OHSM was highlighted by many crew members:

> The negative cases are much more helpful than the rest. They really help us enhance our safety consciousness. We are reminded to avoid any reoccurrence of similar mistakes committed by others. It is (a kind of) promotion for safety. (3E, S2 C1)

Three Chinese idioms were given by crew members to describe the role of these incident reports:

> *Nip in the bud* (of accident occurrence). They had this accident and we should be careful in our work. (Chief Motorman, S1 C1)

> *The past should enlighten us in the future*. It could remind us … next time you should not repeat this mistake again...The effect is significant. (3O, S3 C2)

> *The alarm bell is always tolling* … You think you are right, but in reality, there is a need to be reminded at regular intervals. (Captain, S3 C2)

The impact of an incident was usually disruptive, destructive and negative (Choularton, 2001, p.61). Potential workplace risks could be converted into actual incidents or accidents in the absence of safety reminders. Particularly, the role of an incident report was highlighted by crew members of the same rank involved in similar duties. Some crew members stated that they usually assumed that a case would not happen, but it was the opposite in reality. Hence, safety reminders such as incident reports were thought necessary. For example, a rating told of his personal experience:

> There is a certain effect. For example, in the company's safety circulars, there was one about a rating lashed by a spring line … Previously, I remember, when I heard the chirrup of tightening mooring lines, I would stand there without any movement. Now I know … I should not stand at danger-prone places. I should not stand in the loop of mooring lines. Otherwise my leg might be hurt. This has come from a bloody lesson. (Rating-1, S2 C1)

Hence, in order to prevent any reoccurrence of similar incidents or accidents, it was essential

to learn from previous lessons. From the crew's perspective, the role of safety information was therefore generally positive; it helped raise the crew's safety awareness. Moreover, the data also revealed that safety information could help a crew to enhance their work inspection.

Self-Inspection

If the safety information addressed a specific problem, a dedicated onboard self-inspection would be arranged:

> On a ship, a small steel parcel was sucked into the supercharger, and it was damaged. This piece of information was disseminated to all other ships. The company required us to make a complete inspection. We did and found some problems. (3E, S2 C1)

A senior officer also expressed a similar view:

> As soon as we received the information, we would conduct a thorough self-inspection. The problems that had happened on other ships might also exist on this ship. In ports, PSC officers were vetting. If the company did not send us the information, we would never know. (CO, S3 C2)

In section 4.2.3, it was stated that the PSC inspection is a scheme set for conducting safety inspection on board ships. A ship might be detained by a PSC inspector where evidence proved that there was an apparent deficiency that could affect the ship's safety. Safety information could help a crew prepare for a PSC inspection:

> (There was) a ship from Russia…The wire of a lifeboat had suddenly broken and three of the crew were killed…Lifeboat safety became a special focus for PSC inspections that year. The company management informed us to undertake a thorough inspection. On our ship, when a lifeboat on the starboard side was out ready for launching, the wire was found to have broken strands. The connecting chain had also rusted. We fixed the problem at once. If we'd kept using them, it was likely we'd have had an accident the next time. (CO, S2 C1)

This was a typical example showing how safety information could guide a crew's onboard self-inspection. Apart from the PSC inspection, chemical tankers also experienced inspections from oil majors. The inspection result on one ship could have safety implications for other ships:

> Now there are many oil majors' inspections. If other ships had received an oil majors' inspection recently, their inspection results would be sent to us. We would check and pay particular attention to their problems. If the company did not send us the information, how could we know? We are used to our established working practice and it is difficult for us to find problems. (3E, S1 C1)

In section 5.2.1, the importance of the oil majors' inspection for both companies has been clearly stated. This was also echoed by many crew. One quote was selected:

> If a ship passed inspection, the ship was qualified to carry their (oil majors') cargoes. This was commercial behaviour as well as safety behaviour. In nature, it promoted safety. (2O, S2 C1)

Another engineer expressed a similar view:

> If a ship failed an oil major's inspection, the company's reputation would be negatively affected. This company's ship could not pass the inspection; cargo owners would not trust you (the company). (CE, S4 C2)

The oil majors inspection highlighted the need for crew to conduct self-inspections in accordance with the safety information sent to them. During my fieldwork on board, I was told by some crew members that self-inspection was particularly enhanced during the Beijing Olympic Games in 2008. There was much safety-related information sent on board, requesting crews to double their efforts to guarantee 'absolute safety'. Moreover, this made particular sense in both companies in this study, since some of their ships had been built in the same shipyard and shared a similar ship-building structure; they were called 'sister ships'. This was viewed as an advantage since it was very convenient for shipboard self-inspection and problem solving.

Safety Knowledge

Apart from its role in promoting safety inspections, the safety information could also help to facilitate a crew's acquisition of safety knowledge. First and foremost, the importance of chemical cargo management cannot be overemphasised given its dangerous nature to humans and the environment. In both companies, a copy of the cargo MSDS would be sent on board a ship prior to each voyage. During my fieldwork on board four ships, a copy of the MSDS was seen in public places, such as the crew canteen or cargo control room. On the one hand, due to the complexity of chemical products, it would be impossible for a crew to know all their features; on the other, this knowledge is closely related to personal health and safety. Many crew members stated that they would try to learn some knowledge from the MSDS:

> Chemical tankers are different from other ships. They involve the carriage of thousands of chemicals and cargos whose characteristics are different from each other. Before loading any cargo, I would check the MSDS. Should an A-level anti-chemical overall or C-level overall be worn? How much is the cargo's Threshold Limit Value (TLV) - 2 Part Per Million (PPM) or 100 PPM? Furthermore, is the cargo added with the inhibitor? How about temperature requirement in the tank?...These issues are all very important. (CO, S1 C1)

On board the ships, the cargo operation and the management work were conducted mainly by personnel in the deck department. Those who were less involved, such as marine engineers, expressed an equal concern regarding the safety knowledge about chemical cargoes. For

example, a third engineer said:

> If it was the first time a cargo was being carried on this ship, and we did not know its physical and chemical features, I would have a look at it (MSDS). What information was there about this cargo? What was its risk? (3E, S4 C2)

As a captain (S1 C1) noted, there is 'no good thing from chemicals'. The data showed that crews had serious concerns about and even a fear of chemical goods. Apparently, chemical products can have a severe negative impact on a crew's OHS. In general, the detailed information provided by the shore management helped crews understand chemicals and their potential risks in this study. Given the positive role of safety information in relation to operation of chemical cargoes, some crew expressed their view that they could potentially benefit more from it, if the safety information included in the MSDS could be simplified to become more understandable by all of the crew in consideration of the variety of their educational backgrounds and knowledge requirements. It was proved by Walters' study of small enterprises in Europe that simplified versions of MSDS provided by the management could potentially benefit employees with a better understanding of chemical-related safety knowledge as well as the arrangements for OHS protection (Walters and Grodzki, 2006; Walters, 2006).

Moreover, the safety information could also help refresh a crew's safety knowledge. When a ship received the information, collective learning about the subject issues might be arranged during the monthly safety meeting among the crew. During the meeting, the section in the management system to which a safety problem was related would be consulted and informed:

> Last time, one company's ship had a collision accident … the report was sent to this ship, and then there was a discussion among the officers on board; how to avoid collision ... what measures should be taken in order to avoid the accident … we examined the terms and principles in the safety management system. (3O, S4 C2)

In general, the positive role of collective learning was confirmed by crews. However, the problem with the collective learning was that its arrangement could be compromised by hectic sailing schedules, which will be discussed in Chapter 6. Apart from collective learning, the research also showed that the information could equally facilitate a crew's self learning. It was unavoidable that some vague or grey areas would exist among a crew's understanding of the safety management system. A specific piece of information could help resolve any misunderstanding. For example, a chief officer told of his experience:

> On one ship, a gas pressure alarm problem in the cargo tanks was found. The set pressure for the alarm was 1400 millimetres of mercury height. When I read the

> information, I felt that the alarm would be triggered at less than 10% of the standard value. Actually it should be more than 10%. I consulted the material, and I found I was wrong. (CO, S3 C2)

Thus, it can be seen from the data that safety information can facilitate both collective and individual learning among crews. Matlay (2000, p.204) examined the role of learning activities in organisations and found that work-based individual learning and collective learning were an 'important and necessary condition of sustainable competitive advantage' and an essential feature of a learning organisation. Meanwhile, he argued that the style of management, employees' mutual relations and their working conditions could have a significant impact on the organisation of learning. Harrison (2000) noted that learning at work was regarded as a product of internal competition, and of employees' ambitions as well as corporate values. In my study, the data suggested that learning safety information can help reinforce a crew's understanding of safety knowledge that contributes to OHSM on board ships.

In this sub-section, the role of safety information sent by shore management was discussed. The study shows that the information could help promote a crew's safety awareness, workplace self-inspection and safety knowledge learning. Although some crew members mentioned that, in some cases, some information was delayed or redundant, the contribution to a crew's OHSM was generally acknowledged by the shore management as well as by the ship's crew. Regardless of other influential factors, the study showed that communication for safety information support was generally positive. This was however less so in relation to communication to crews for material resource support which I examine next.

5.3.3 Material Resource Support

Given the importance of technical and informational support, the material resource support was also essential for ensuring a ship's normal operation. The communication for such support was usually conducted in formal written mode if it was not urgent.

Insufficient Supplies

The discussion in section 5.2 showed a fairly strong commitment to OHSM in both companies. However, this required underpinning with the sufficient supply of material resources. From a crew's perspective, the study showed that the crew's request for the supply was not actively responded to by shore management. Many crew members in both companies commented that shore resource support was insufficient for ensuring shipboard OHSM. A

significant gap was seen between the shore supply of and the crew's demand for material resources.

The interviews with crew members collected some examples indicating the lack of material supplies from the companies. One was the supply of working tools. On a chemical tanker, an Ullage, Temperature and Interface (UTI)[xii] is a basic tool for the measurement of cargo volume. The following story was told by a junior officer about the supply of this tool:

> According to the standard, a chemical tanker should have several UTIs. We had only one, and reported this to the company. They said it was ok. At the time, there was no inspection. Why should the company spend this money? Before the inspection, they borrowed a few from other ships. Afterwards they were returned. The tool is very costly. (2O, S1 C1)

Another issue was the supply of consumable materials. It has been stated that passing external inspections was highlighted by both the shore management and the ships' crews. In order to give the external inspectors a good impression of deck maintenance, a chief officer wanted to paint all the rusty areas on the main deck. He made an application to his company for the supply of paint:

> The spare paint on board was not sufficient and we made an application. But the managers were not on the spot and did not understand. They gave us feedback from a theoretical perspective. One litre of paint could cover xxx square meters (of deck area). They said they had supplied more than ten buckets before, and the ship could use them for many (square meters). Eventually, the supply was delayed. Regarding this issue, there was a misunderstanding between them and us. (CO, S2 C1)

For the engine room department of a ship, a similar situation also existed in terms of the oil consumption of engines. The following example shows this:

> Generally, light oils such as diesel oil and lubricant oil, are more expensive. If the volume of consumption was higher than on other ships, the shore management would call the Chief Engineer. Why did this ship consume more? This ship's main engine was designed for number 20 diesel oil. Now we use 1804S7. Its quality is bad. The corrosion of the cylinder ring, high pressure oil pump, and oil injectors is greater. It leads to more consumption of the lubricant oil. There is no way to control oil consumption in such a circumstance. It is a contradiction. (2E, S1 C1)

In order to avoid a 'questioning call' from the management, crews showed their prudence in order to maintain oil consumption at a specified level. Similar evidence was also witnessed by me on S4 C2. There was even a dispute on the 'time point' of changing the oil (from heavy to fuel oil) between the marine engineering department and the deck department when the ship was approaching a port, since it involved the consumption of light oil – the more

[xii] UTI: A device used for measuring the height and temperature of liquid cargoes in a tank.

expensive one.

Furthermore, some crew members also reported some equipment failures, and how their company was unwilling to arrange an immediate repair. Although the shore management was said to have been informed, they tended to 'intentionally neglect' those problems. For example, an underlying problem was mentioned when I interviewed a bosun in the cargo operation room on S3 C2:

> A: Like the software in the cargo control station (he pointed to it as he was speaking), the pressure detection indicator had a problem. The company knew that, but they did not arrange repair.
> Q: How would you deal with an inspection?
> A: We would bluff it out. The inspectors would not inspect each piece of equipment on board. If the problem was identified, the company would spend money to solve it. But if, luckily, the problem was not touched and the inspection was finished, the company would not need to spend the money. The attitude is to delay repairs as much as possible. (Bosun, S3 C2)

The examples given above indicated a significant supply-demand gap between the shore management and ships' crews in terms of shore material resource support. This could cause considerable inconvenience and an additional workload to crews. For example, a chief engineer explained:

> They (the company) do not want to spend more, but they want to earn the most. A contradiction would arise. The crew would be working hard. A heavy workload is imposed on the crew. The crew do what they should; they also do what they are not supposed to do. (CE, S3 C2)

Thus, it could be seen that the lack of resource support on board could cause considerable problems in a crew's routine working practices. Most significantly, it could have a direct impact on shipboard OHSM practice, which will be discussed next.

Potential Impact on OHSM

The previous sub-section showed that shore material support was far from what crews expected. Given a ship's request for the supply of some materials was confirmed, there might be some other problems associated with it, such as the quality of products. For example, on a chemical tanker, there were plenty of tubes lying on its main deck. Bolts, nuts and iron rings were used for fixing those tubes. A bosun talked about his experience in the application for the supply of those small spare parts that were commonly used on board:

> The shore management supplied us with the non-national standard units. The quality was not good enough; this would affect our work. The national standard products … no matter what the natural environment was like … the wind and rain ... they would

> not rust easily. But the steel content in non-national products was less. They would be rusty in a few months. Sea water corrosion would be significant. If they were rusted, we would not be able to dismantle them if there was a leakage – we would have to saw them off. (Bosun, S1 C1)

The use of non-national standard products could potentially cause some problems with a crew's shipboard OHSM. The problems could become severe in consideration of the dangerous features of chemical cargoes; this issue was repeatedly mentioned by crew members on all four ships. For example, a rating told of one situation:

> This ship often carries Benzene. It is explosive and inflammable. To wash the cargo tanks, the electrical conductivity of the pipes connecting tank washing machines should be good. On this ship, a few of them were found to have deteriorated. The ship's leader requested new (pipes), but the shore management did not supply them. This would be a potential risk to us. (Rating, S3 C2)

As a consequence, there was a possibility of leakage, and chemical toxicity could cause health and safety problems to the crew. A chief officer gave another more serious example. It was about his ship's application for the supply of toxic gas test tubes which were specially used on chemical tankers for the measurement of the remaining gas density in cargo tanks:

> Generally, accidents are caused by the violation of the procedures. We acknowledge we should act entirely according to rules and regulations. In our company, the rule said that each time, after washing the cargo tanks, the remaining gas toxicity should be measured using a toxic gas test tube. The company supplied only one box of toxic gas test tubes: ten tubes in one box. The ship had ten cargo tanks, and it was not enough even for one single voyage. How could we test (gas toxicity) in the ballast water tanks, pump room tanks according to the requirements? Since oil majors had this requirement, the solution was to falsify the records. The company did not allow us to falsify the records, but the company did not supply enough tubes on board. What was I to do? I hear you ask. (CO, S2 C1)

This example suggests that the lack of supply of the tubes made the crew's compliance with operational procedures impossible. Also, the unmeasured air/gas composition in cargo tanks could pose a serious threat to those crew members who entered the tanks for final cleaning work. Furthermore, the crew had to falsify their work records in consideration of the compulsory requirements both from their company as well as the external inspectors. The sailing voyages on all four ships showed that, generally, this problem existed on ships in both companies. Crew members explained that a tube was very expensive and it could not be re-used. Therefore, their company could not supply many to ships.

The study showed that there was a lack of sufficient material resource support from the shore management in both companies. In general, this could be attributed to the management's concern regarding costs. The lack of material support could cause potential risks to shipboard

OHSM. The consequence was that crews' work and their OHS were negatively affected.

5.4 SUMMARY

One major theme that emerged from the investigation of shore-to-ship communication was the purpose of providing shore support to ships. In this chapter, communication for such a purpose was examined in both companies. The perspectives both of the shore management and crews were considered. From the management's perspective, the experience and competence of managers and superintendents, as illustrated in the data, were essential for providing such support. Also, the management's commitment to OHSM could be seen from their attitudes towards problems raised by crews. On the whole, the shore interviews suggest that shore support to ships, particularly the supervisory support, was crucial for shipboard OHSM. The data also indicated that shore support could be categorised into three different and interrelated types: technical support, safety information support and material resource support. They were used to guide the data analysis in this chapter. As stated in Chapter 1, the study focused very much on the crews' perspective. The findings are summarised below.

Technical support was achieved mainly during a ship's visit. Some crew members expressed the view that the management support was useful in terms of managers' or superintendents' knowledge and skills, which could help shape a crew's good working practices. In this sense, it was a kind of 'safety education' for the crew, and the relationship between management and crew was similar to the long established traditional master-apprentice relationship (Smith, 1981). However, for some other crew members, the role of management's technical support was rather limited. They believed that they could manage workplace technical problems with their knowledge and experience. Crew members who held this view were those who were more experienced and more confident about their current work. Considering the latter factor, the overall effect of technical support on a crew's working practices was limited.

Regarding the safety information support, this was achieved mainly by written communication. The occlusive and isolated shipboard environment justified the need for information support to be given via modern communication technology, such as satellite communication. Data were collected both from internal (in-house) sources and external sources, and covered a wide range of topics, such as the latest rules and regulations, special operation procedures, deficiency reports, and incident or accident reports. A majority of crew

members thought that safety information was very useful for promoting workplace safety. This information helped crews draw lessons from the past, promote shipboard self inspection and enhance their safety knowledge. To sum up, safety information could play a significant positive role in promoting a crew's safety awareness.

As for the material resource support, communication occurred whenever ships had a specific need. Although the operation of the ships required a wide range of material resources, the data do not reveal that there was a significant shortage of those needed for ensuring a ship's seaworthiness. However, the evidence shows that the supply of material resources closely related to a crew's OHSM practice on board ship was insufficient. The lack of supplies could be seen to range from tools and spare parts to consumables. The lack of material resources posed a potential threat to crews' onboard OHSM. It could be explained by the management's concern about costs, a view repeatedly expressed by many crew members in the interviews.

To conclude, the examination of shore-to-ship communication for work support in this chapter showed both positive and negative outcomes of OHSM. The communication for providing management's technical support was generally helpful. The communication for information support was the most useful. However, communication for material resource support was found to be insufficient and had a negative impact on shipboard OHSM practice. It has been widely argued in the literature that material resource support from management is essential for effective workplace OHSM. The evidence in my study showed that the lack of resource support from the management undermined the overall outcome of OHSM in both companies. To a great extent, it reflected the management 'commitment' to safety is more formal than real. In all, there was a mixed outcome regarding the study of communication for work support. Further discussions will be offered in Chapter 9.

CHAPTER 6 (SHORE-TO-SHIP) COMMUNICATION FOR MANAGEMENT CONTROL

6.1 INTRODUCTION

Another major focus in shore-to-ship communication was the control of ships' operation and management. The main objective of this chapter is to examine the communication for management control and explore its impact on crews and their work. Data will be presented and analysed from the perspective of both management and crew. Given the fact that the communication for such a purpose is achieved through technological means or ship visit communication and the two means of communication lead to different results, the discussion will be structured to take into account the two scenarios.

6.2 COMMUNICATION DURING SAILING

When a ship is at sea, the shore-to-ship communication occurs mainly through GMDSS (see section 2.4). The communication usually happens between company managers/superintendents and senior officers, particularly a ship's captain. In this section, such communication will be examined, and will be presented from both perspectives in terms of its impact on OHS.

6.2.1 The Management

From the management's perspective, there was concern about whether a crew's decision making in relation to OHSM was adequate. This will be detailed below.

Crew's Decisions Respected

The data showed that communication for the purpose of supervising a ship's safe operation was dominant in the top-down communication process, which allowed shore management to understand whether work orders or instructions were being properly implemented. The interviews with the management in both companies showed they believed that communication with crews was conducted in a moderately consultative way. For example, a marine engineering manager (C1) explicitly commented that the communication was never a 'single-way compulsory order' conducted in 'a top-down approach'. Instead, the management's decisions were taken on the basis of 'understanding the crew's thoughts and their difficulties' (ibid). A senior manager further explained:

> If there was a typhoon, a strong cold front or a rough sea, our analysis and

> judgement might be different from the crew's observation. This could cause difficulties in implementing (orders). Then we had to telephone or email communication to make it feasible. (Vice General Manager, C2)

A general expression of the management indicated that most major decisions were taken in consultation with ship's crew, and the crew's decision-making power was well respected by the management in both companies. A common reason for this given by them was that when a ship was at sea, the crew, as front-line workers, would have the best knowledge of the shipboard work environment. Also, in both companies, a captain-responsibility scheme was implemented as a result of the adoption of a mandated safety management system (IMO, 2002b). Although a company's management remained responsible for the safety supervision of ships, a captain was still the key person for ensuring his ship's safety. With his professional knowledge and on-the-spot observation, a captain could make better and more reasonable decisions than could others:

> In general, if the company's order is different from a captain's decision, the captain's decision is dominant. After all, the captain is on the spot. He knows (the real situation) much better than us. His decision tends to be more reasonable. (Marine Engineering Superintendent, C1)

In a few cases, some shore interviewees, such as a marine engineering manager (C1), commented that senior crew members could make immediate decisions and 'report to the company at a later stage'. In general, the management would not interfere in a crew's decisions except when there was a 'significant deviation'. The emerging data suggested that the management in both companies agreed that a captain's independent decision-making power should be guaranteed, and not be restrained by any additional terms. A captain's independent decision making was even encouraged by the shore management:

> When I was on board, I often encouraged the captain: whatever happens, you should have your own judgment and should not be affected by other external factors. (Marine Engineering Superintendent, C2)

By and large, the shore interview data suggested that a ship leaders' decision-making power was well respected. A crew's participation in the major decision-making process was considered important by the management. The shore interviews showed that the practice in both companies was similar to the participative management approach, as widely discussed in the literature (Kearney and Hays, 1994; Kim, 2002). This approach aims to balance the involvement of both management and employees in terms of problem solving, decision making and information processing (Wagner, 1994).

'Approved' Crew's Decisions

Although some data showed that ship leaders' decision making was well respected and should not be constrained by other factors, as proposed in the preceding paragraphs, in practice, the understanding of the decision-making power was interpreted conditionally. Some shore interviewees showed rather reserved attitudes in their understanding of ship leaders' power, particularly a captain's so-called absolute power, in terms in which it was stated in the safety management system. They stated that it was ambiguous, and should depend on the actual context in which an issue arose. A manager interpreted his understanding of a captain's power as follows:

> Although the ISM Code specified this (absolute) power, understanding this statement would vary when there was conflict between safety production and profit. The communication technology has improved, and crew's decisions should be approved by the company. There were a series of adjunctive terms imposed on the use of a captain's decision-making power. (Safety and Quality Manager, C2)

It was stated in section 2.4 that the development of modern communication technology, such as satellite communication, has significantly reduced the 'distance' between shore and ships. As a consequence, a crew's decision making was more likely to be influenced by the shore management in terms of the *balance* of the ship's safe transport and the company's profit earning. As noted in the quotation above, it frequently happened that a crew's decision had to be *approved* by their company before they took further action. Although it was unclear how and to what extent crews' work had been affected so far, the data highlighted the management's concern about their company's core interest. For example, one marine affairs manager said:

> We work in the shore office. From our perspective, we cannot say, 'Captain, you just do it (as you wish)'. We would also consider whether the action is line with the company...the boss's intent (interest). If a captain insists on his own decision, we would support him. But we could not support him to act against the company. (Marine Affairs Manager, C2)

'The boss's intent' was an alternative way of interpreting the company's core interest. In general, the data suggested that shore management had a strong commitment to the so-called company's core interest in undertaking a supervisory role over ships. In order to satisfy the boss's core intent, the high level of consistency between what was required by the management and what was actually done on board ships was emphasised. For example, a manager stated:

> The company's order should be implemented on board ships without any compromise and discount. (Marine Affairs Manager, C1)

From the management's perspective, full compliance with their orders or instructions

implied good OHSM at sea. Some managers clearly expressed the view that if a crew acted according to their requirements, they would not be held responsible for any negative OHS consequences. In practice, the interview data also suggested that the real situation in both companies demonstrated a certain level of satisfaction to the management in terms of a crew's response to their orders or instructions:

> According to my experience, disagreement between shore management and crew was rare. (Marine Affairs Superintendent, C1)

> There has been no case where a ship has failed to follow the company's orders. (Marine Engineering Superintendent, C2)

Thus, from the management perspective, they showed their respect for crew's decisions regarding the operation and management of the ship. However, it might also be understood that the crew did not question the management decisions and simply followed what they were told by the management. They will be further discussed in the following sections.

In order to protect the company's core interest, any decisions relating to a ship's operation had to be approved by the shore management, which meant that the ultimate decision making power was in the hands of the shore management of both companies. In section 2.7.2, it was stated that decision making in Chinese organisations tended to be centralised. This study revealed a similar situation in these companies. Although the shore interview data showed little tension and discrepancy in the communication between the shore management and a ship's crew, the possible extent of the impact of the shore management on a crew's decisions remained unclear. In the next section, this kind of impact, particularly the impact on senior crew members, such as a captain, will be discussed first.

6.2.2 Pressure on a Ship's Captain

The discussion in the preceding sub-section was conducted from the shore management's perspective. In this sub-section, the focus will be shifted to the ships, with the aim of examining how shore-to-ship communication for the purpose of management control affected crews and their work. Among several senior officers on board a ship, the captain was certainly the first person responsible for overall shipboard OHSM. This sub-section will examine how a captain's decision making as well as shipboard working practices were affected by shore-to-ship communication.

The Incoming Call: Captain, Keep Going – You Decide

Before the ISM Code was introduced to the international shipping industry, a captain's power was subject to different interpretations. With the adoption of a mandated safety management system, a captain's power was exclusively addressed. In the management systems of both companies, there was a dedicated section called *captain's power statement*, issued and signed by the general managers of both companies. In the system of C1, it stated:

> For the protection of human life, ship and cargo safety, and pollution prevention, a ship master can take any measures or issue any orders whenever necessary. No matter whether those measures or orders are consistent with company's requirements, this decision-making power should not be constrained by the ship owner, charterer, or any other persons. The company promises to guarantee the captain's right and welfare, and should not treat him differently whenever he exerts his absolute power.

In the system of C2, the statement was:

> A ship master can take all necessary measures to maintain a ship's order, and to ensure crew and ship and cargo safety. He has the absolute power to take determined actions and make requests for the company's support in order to prevent the crew from being hurt, the ship or cargo being damaged, and ocean environment being polluted. A ship master may use his professional judgement and should not be constrained by the ship owner, charterer and any other person.

It can be seen that a captain's decision-making power was guaranteed in the management systems. Some comments from shore management in the previous sub-section supported these statements. From the crew's perspective, many crew members also showed a clear understanding of a captain's power. For example, one captain described:

> In the management system, a captain's power is clearly stated. It's overriding. The PSC inspectors would also ask me to reiterate it. What power does a captain have? Nobody is allowed to interfere when a captain exerts his power, including maritime administrations, company's leaders, ship owners and charterers. (Captain, S1 C1)

Interviews with lower ranking crew members also showed that a captain's independent decision-making power should be maintained and respected. For example, a bosun expressed his view as follows:

> Now it's the captain's responsibility scheme. The company's management system endows a captain with absolute power. The captain, in view of the prevailing sea conditions, has the right not to listen to any person's instructions; a captain has the power to decide what to do. Previously, this occurred only in foreign countries. Now it has been introduced into China. (Bosun, S4 C2)

Given the clear written statement and the crew's understanding of a captain's power as illustrated above, the interviews with crew members offered different views on its operationalisation in reality, particularly in the case where a crew's decision was inconsistent with the company's wishes. A general view was that, in practice, a captain's decision-making

power was limited; to a large extent, it was the company's orders or instructions that really mattered.

It was found that, among all the work supervised by management on shore, a ship's sailing schedules were one of the major concerns in routine management. A captain (S2 C1) told me a recent event that had happened to him. His ship had been going to call in at a domestic port in QZ in China, which was his first voyage there. The company suggested the captain apply for a pilot for assistance safety considerations. When the ship arrived, the pilot was not available. The company then asked the ship to call at the port directly. Meanwhile, the company agreed to arrange for two tugs to assist with berthing. Eventually, only one tug arrived. By that time, it was night and already dark:

> I said (to the company) that there was only one tug available. Additionally, it was at night. I could not call at the berth. Not soon later, the company called me again…They ordered me to call at (the port)…From my perspective, they were my immediate superiors. They asked me to call. Should I call or not call??? Even though I followed the order, I felt very reluctant. (Captain, S2 C1)

Notwithstanding his reluctance, the captain did follow the company's order and took a risk to make it eventually. This led him to re-think his decision regarding his decision-making power as a captain:

> Regarding this issue, I had contradictory feelings. When the safety aspect conflicts with the business aspect, the safety should be prioritised. When the company's leaders visited us, they also said so. The same was stated in the management system. They repeatedly emphasised this (principle). The management's statement about a captain's overwhelming power was stated and signed. But, in practice, it is different. It is useless! (Captain, S2 C1)

In this case, the captain felt infuriated by the company's order. He felt his power had been stripped away, particularly in a critical situation where the ship's safety and the company's interest were in conflict, as a result of which there was little room to accommodate his independent decisions. Coincidentally, a similar example was given by a rating on S1 C1. One evening, the wind was heavy and the sea was also rough. When the ship arrived at the port of CJ, the company asked the ship to call at the berth at night. Although the captain felt in a dilemma and thought it was too dangerous, eventually, the ship submitted to the company's order. The company's reply was that the 'company knew the ship had difficulties, but the ship should manage to overcome them' (Rating, S1 C1).

Apart from the pressure borne by the crew on the occasion of calling at a port, similar situations were encountered when a ship was at sea. My field notes (8 April 2010) recorded

one event, told by a third officer, which occurred during the voyage just before my embankment on S4 C2:

> The previous voyage was deemed extremely dangerous. The ship encountered a low pressure storm. Affected by athwart waves, the ship rolled at a maximum degree of 40-50 degrees. It was extremely dangerous. Most things on desks were gone. The chef could not cook, since the cooking oil would flow out as it was poured into the pan. Several cadets were seasick and vomited the whole day.

Another similar event was told by the bosun on S3 C2. The ship confronted heavy winds after the ship setting sail outward bound. The captain thought the situation dangerous and reversed the ship's course back to shelter. Then, the company started urging him: 'Other ships are sailing as usual, so why don't you dare to sail'? Eventually, the ship was forced to resume sailing again. But the captain was condemned by most of the crew for his selfishness – he considered his own interest rather than crew's and did not dare to offend the shore management.

Given that in some cases there might be a foreseeable danger, the management could give their order in a more flexible way. A common practice was that, seemingly, the company was giving orders in such a way that it seemed to be asking for a consultation. In fact, the real situation was described by a chief officer:

> The company wanted you to sail, so the company would not give you direct order 'not to proceed'. 'Captain, you see, you keep sailing if conditions allow…You decide'. How does a captain make a decision? Many similar issues ... putting the ball in his court…, (they) are not willing to take direct responsibility (CO, S3 C2).

In such circumstances, the abundance of words' (multi-) meanings in the Chinese language is used for a certain effect – certain words in a specific context should be understood in the opposite way. For example, a chief engineer illustrated the multiplicity of words' meanings as follows:

> 'Captain…the ship was STILL anchored, but you must ensure safety'...this is a reverse of the words' (meaning). In Chinese, the meaning of words in this context should be understood in reverse. (CE, S2 C1)

In the Chinese culture, the communication style is more 'implicit, subtle and indirect' than in western counterparts (Shi and Westwood, 2000, p.212). The intention is mainly to avoid direct confrontation and to preserve harmony and face. Usually, the real meaning (intention) of communication is embedded in its context, such as tacit understandings and mutual relationships, rather than in the words themselves (Hall and Hall, 1987; Shi and Westwood, 2002). In this quotation, literally, the management seemed to offer a kind of safety reminder by emphasising the word *'still'*, but the hidden meaning was that the ship should not remain

at anchor, and should start off on the next leg of the voyage.

To sum up, the quotations above suggest that a ship's captain could be placed under tremendous pressure in communication with the management in both companies. The analysis of the data further revealed that such a kind of communication was done mostly by telephone. In section 2.4, it was described how telephone communication could be achieved through a GMDSS system (satellite phone) or mobile phone service (when a ship was in domestic waters or even foreign coastal waters/ports where a ship visited regularly). However, it is a matter of fact that written communication would be much cheaper and clearer. Unfortunately, written communication was found to be infrequent on the occasions when the shore management were concerned about a ship's sailing schedule. Meanwhile, it was found that it was rare for the management to give compulsory and pressing orders to crews via written communication, as witnessed during my time on board ships. A captain revealed why his company urged ships through telephone communication (which was more expensive in terms of communication costs) rather than in writing:

> After all, if any incident occurred, they (the company) could discharge their responsibility. 'I (company) made a call to you (captain). When did you receive my call, and what was discussed over the phone? There was no record at all, was there?' I asked them to send a written order. It was the procedure in the management system. They didn't dare to send a written order to me. They didn't dare! ... You couldn't let me take the risk alone. I could take this risk, but you couldn't put all the responsibility for the risk on me. So the crews on ships and them (shore management) belong to a different social status. (Captain, S2 C1)

This view was also echoed by some other senior officers, such as the CO (S1 C1), CO (S3 C2), and the captain (S4 C2). The captain's fiery words could explain why the shore management used telephone communication to urge the captain to set sail. Written documents are retrievable, and they could serve as evidence for an investigation of any unexpected occurrences. The shore management could be obliged to share certain responsibilities if an 'unreasonable' written order was given to a ship. Through telephone communication, the shore management would be exempt from any accountability, simply because there was no practice in place to record telephone communication on board ships. Without any evidence to prove that a ship was forced to set sail by the shore management's coercive order, a captain would eventually be held responsible for potential incidents or accidents. The consequence was that the aftermath of any risky operations on board a ship would be imputed entirely to the ship's captain.

In this sub-section, the company's tight control over a ship's sailing could be seen from the communication between shore and ship. The control could commonly be seen in an adverse natural environment where imminent dangers to ships existed. The shore management's communication with crew was achieved mostly via the telephone. The crew's interpretation was that this was to avoid negative consequences to the management originating from the issuance of improper orders or instructions. Under such circumstances, it is foreseeable that a captain would bear more psychological pressure and tend to take more maritime risks.

Captain's Authority Revisited

As discussed above, although a captain's authority was guaranteed in written form, it was significantly affected by the company's management. In order to understand this discrepancy better, it will be revisited in this sub-section. In general, some crew members, particularly the senior crew, stated that it was impossible for a captain to have the power to make the final decision. For example, one captain commented:

> The final decision making power is in the captain's hands – this is said from the theoretical perspective. In reality, it is impossible to do so. This is common in China. (Captain, S1 C1)

Specifically, some crew members said that a captain was equal to an employee working for the company. The written statement of his power did not change the subordinate nature of role in relation to the shore management. Although a captain was considered a member of the company's safety management team, the research indicated that a captain's sense of belonging was weak:

> I don't have this sense. I don't feel I am a member of the management team. I manage this ship under their leadership. I am not equal to their rank (laughing). (Captain, S3 C2)

Furthermore, if a captain's decision were inconsistent with that of the company, it could potentially cause tension between the two. A senior officer explained why it was like this as an insider as well as outsider:

> For the shore management, a captain's individual interest is closely held in their hands. If he refused their request, he might be punished by them implicitly or explicitly. Right? 'I (shore management) want you (captain) to call at berth; while you made me lose face…'. For a captain, it's a heavy psychological pressure. (CO, S2 C1)

It was mentioned in section 2.7.2 that 'face' is one of the key aspects of the Chinese traditional culture. If a captain did not follow shore management's intent, the management could be annoyed with him. The negative impact on a ship's captain could even extend to his

job security if the management was seriously offended by him. For example, a captain talked about his dilemma:

> You could have the absolute power, but sometimes you would need to balance back and forth. If you make a decision today and tomorrow you might go home. As a captain, it doesn't work if you make decisions entirely according to objective conditions. (Captain, S4 C2)

Furthermore, he gave an example to support his argument:

> The fire extinguishing system was broken … I could proceed. According to the requirements of the PSC or oil majors, the ship was not seaworthy. If I required repair work in this port, what would the company make of this decision? But in case there was a fire, then what to do? In such a circumstance, I didn't have the right to make decision, and I had to sail.

This situation was found to be very similar to what was described in Perrow's work (1999, p.188):

> That is, as long as a captain meets the production level expected, no action is taken even if it is known that he takes large risks to do so. If the captain falls below this production level, pressure is increased. If the result is an accident, the captain is blamed, and penalised through fines or dismissal.

In this sub-section, data analysis revealed that a significant gap existed between what was stated in the safety management system and what happened in reality. The result showed that a captain was left with little authority in the presence of the management's controlling power over his crew. In section 6.2.1, it was mentioned by the shore management that a crew's non-compliance with the company's orders was rare. Considering the data presented in this sub-section, it could be understood that it was a kind of forced compliance which tended to become a *common practice* in the name of the implementation of the management's collective decisions. As a consequence, OHSM on board ships was, by and large, compromised, particularly in situations where a decision whether to 'stay or go' had to be made in an adverse natural environment or a ship's seaworthiness was not guaranteed.

6.2.3 Other Crew Members: We Listen, Given the Difficulties

In the previous sub-section, the study showed that a captain's authority was compromised by the involvement of the shore management. In this sub-section, I will continue to explore the extended impact of shore-ship communication on the rest of the crew on board.

Compliance of Collective Decisions

As a decision would be agreed as a result of communication between the shore management

and a ship's captain, it would be implemented accordingly by the crew. On the whole, many crew members had a 'strong sense' of compliance with collective decisions between the shore management and senior officers, particularly a ship's captain:

> In general, they should be implemented 100 per cent without any conditional terms. (2O, S1 C1)

> The work order...it doesn't matter whether it is difficult or not (to implement). They (shore management) give you an order, and then you just do it accordingly. (3O, S3 C2)

A junior officer considered this issue from perspective of the relationship between compliance and liability, which had implications for the crew's individual interest:

> We should act as instructed by the company. Everybody is afraid of taking liability, right? (If) you do it alone, what happens if there is an incident/accident? Then you should take full liability. (2O, S4 C2)

Regarding the crew members' opinion of this view, they thought unconditional compliance could avoid responsibility for the negative consequences of an operation being attributed to them. Furthermore, some crew members interpreted the need for compliance with collective decisions from the perspective of the employment relationship:

> After all, we 'eat the company's rice' – the company issues a salary to us. There is a saying, 'If you are invited for a meal, it would be difficult to say something against the inviter'. We are the 'soldiers' of the managers. We should submit to our superiors. Generally, we would not intentionally delay the voyage. If the company could make profit, they would be happy to issue us with a salary. (Chief Motorman, S3 C2)

In C1, it was found that the style of the shore management could have a certain impact on crews' attitudes towards the implementation of collective decisions. Terms such as 'formal regiment' and 'semi-militarised management' were referred to by some crew members in order to distinguish their company from others. The terms originate from a military context, and were used to feature a high level of compliance with the company's decisions. For example, a junior engineer described:

> Basically, we act according to the company's instructions. It is rare to violate them. This company, as viewed by the managers, is the formal regiment. (3E, S1 C1)

In some cases, even though a crew disagreed with the management's decisions, they were still forced to comply. For example, a bosun, the crew member in charge of the cargo tank washing operation, told me of one of his recent experiences. The ship was scheduled to carry ethylene glycol in a port in South Korea, so the cleanliness requirement of cargo tanks was extremely demanding:

> The coating was oxidised. The ship was not suitable to carry such highly demanding cargoes. We reported to them (shore management), and they didn't agree with us and forced us to carry (the cargo). At the loading port in South Korea, the ship could not pass the tank cleanliness test, and we sailed out to sea to wash the tank again. We could not pass the inspection until the fifth washing. Back and forth, half a month was gone. (Bosun, S3 C2)

He concluded by complaining about the shore management:

> This was the shore management's (problem). They didn't care about our opinion, (but made) arbitrary decisions. They didn't consider real conditions when giving orders … chaos…(Bosun, S3 C2)

During that time, they felt they were being squeezed between the shore management and the cargo tank inspectors, as a result of which they experienced tremendous physical as well as psychological pressures. In brief, for many crew members, the 'wise and safe way' was to do as requested by their company even though a decision was 'unreasonable'.

Interpretation of employees' compliance and non-compliance involved a complex number of factors; therefore, it was important to identify the reasons and produce some constructive ideas for the improvement of the levels of compliance (Hutter, 2001, p.232 and p.250). Makkai and Braithwaite (1994) conducted a qualitative study across different industries, and found that employees' compliance was affected mainly by their moral obligation. The study conducted by Hutter (1997 and 2001) in Britain's railway industry showed that employees' consciousness, work morale and personal sense of social responsibility could affect their sense of compliance. However, my study showed some different explanations for a crew's compliance with the management's collective decisions. The presence of the organisational decision-making power, the crew's fear of taking responsibility and their consideration of individual interests were the apparent reasons that emerged from the data. Under such considerations, compliance was considered important given that a decision for action was unjustifiable. As a result, crews' onboard OHSM practices were significantly affected. Details will be discussed below.

Hectic Schedules and Long Working Hours

The study revealed that the crews' work was significantly affected by the *result* of communication. As a consequence of fully implementing the decisions made jointly by the shore management and the senior crew, the data collected from onboard interviews and observation identified the most direct problems that seriously affected the crews' OHSM practices: one was hectic sailing schedules; another was long working hours. These will be

discussed in detail in turn.

On average, the study found that, on board the four ships, the sailing schedules were always hectic. For example, a senior engineer described an occasion when the ship's normal schedule was turned into a rush by a sudden order received from the company:

> Last time, we were going to carry cargoes in the port of HZ. The Chief Officer on this ship is good at work arrangements and would not cause overtime. Suddenly, the company ordered the ship to call at the berth that night. Then tank washing, ventilating, mopping the tank floor…all had to be done. Usually, it took two days, but we were forced to complete the tasks in one day. (2E, S1 C1)

As seen above, an order given by the shore management had to be implemented by any means. The temporary short notice meant an additional workload for the crew in this case. Although a temporary order was not often seen, the issue of tight schedules was widely addressed by many crew members. For example, a junior officer said:

> The company's order was issued on board, and we had to act accordingly. The main difficulty was time. The voyage orders came one after another. In our minds, we felt that the schedule was too tight and we were too tired. You were seasick yesterday. They (deck crew) were on deck to wash the cargo tanks; even the ship was pitching and rolling heavily. They had to complete the washing as soon as possible. The shipping task was pressing. There was no other way around it. (2O, S1 C1)

The described scene was witnessed during my sailing voyage. Influenced by a strong cold-front winter storm, I was terribly seasick for almost two days lying on my bed, but the tank-washing team continued their work as usual. As a consequence, the hectic schedules intensified the crew's workload and their working environment deteriorated. Furthermore, the data also showed that hectic sailing schedules were linked to the booming shipping business. This could be seen from the following account:

> After the financial crisis, this year is better. The ship would discharge cargo without any delay. Like this ship, the berthing time would not exceed 16 hours. There was no time to rest and no time to go ashore to have your hair cut. It was normal to call at berth at 1 or 2 am in very early morning. (2O, S3 C2)

Due to hectic sailing schedules, a ship's normal maintenance work could be affected, particularly regarding work the in engine room department:

> All our work was prioritised by the ship's sailing schedules. The company wanted us to keep the schedules, but there was a conflict with the equipment maintenance plan. The engine had to run, and we didn't even have time to do the work. The company asked us to ensure safe production, but what happened if a machine was over attrited? The ship would not stop sailing until its condition did not allow (it to continue). (CE, S1 C1)

Consequently, the shortage of time led to longer working hours, which was also commonly seen in the data. Given the rule in place regarding the limit to working hours, many crew members expressed the view that the real working hours were much longer than the stipulated limit. The field notes recorded a number of observed events. For example, on board S1 C1, a 'high time' for tank washing was described as follows:

> Over the last two days, I could see that everybody on board was very busy. They were not willing to talk much with me. Tiredness could be seen from their eyes and faces. I went to the bridge again after dinner. I saw the second officer was still on the bridge. I asked why (since it was not his duty time). He answered that the chief officer was sleeping and so he was taking the watch duty for him. He said the chief had slept only two hours yesterday. He was too tired. I read the poster on the back door of the bridge and in the dining room, in which it was clearly stated that nobody's work hours should exceed 8 hours a day. But I noticed that, in reality, apart from the cook, everybody on this ship exceeded the stipulated working hours. Fatigue was common among crew members on this ship. (Field Notes, S1 C1, 5 February 2010)

Similarly, one rating also described to me a working day during my trip on the ship:

> I read the written rule, but (we) do not act according to that. For example, the bridge watch keeping duty for a rating should be four hours per shift. Last evening, I was on duty from 18.00 to 24.00. When I was ready to hand over my duty, the ship was going to call berth. I was asked to continue till 2.30am. We had work till all the work was done. One cadet continued till 4.00am. Today, I should get up at 5.40am to take over duty. We do not work according to the rule. On this ship, if the bosun requests me to continue, I must do so…more time and more work. There is no other way around it. (Rating-2, S4 C2)

As part of the work records in the management system, a crew's working hours should be written down on a daily basis. The records should be checked by both the shore management as well as external inspectors, such as those from PSC or oil majors. These records serve as key evidence indicating whether a crew's health and safety are guaranteed. However, the company's method of dealing with this problem was described by a junior officer:

> We fabricate the records. The real working hours are far more than those stipulated…more than 12 hours! (2O, S2 C1)

The reason for fabricating the records was understood by all crew members, since long working hours would mean a major deficiency. If this were identified by an external inspector, the ship could be detained by PSC or would fail the oil majors' inspection. In C1, the problem of long working hours was reported by crews, and the company asked crews to make a separate record of their real working hours and report it to the company. But it was said a significant amount of time had elapsed since the real working hours had been reported and the company had not offered a better solution to this problem yet:

> For most of us, most of the days would have extra working hours. The rest time could not be guaranteed. The company currently has no solution to this problem. (Captain, S4 C2)

> For the overtime, they just asked us to make a scientific arrangement (for the work). (CE, S1 C1)

Making a 'scientific arrangement' was mentioned by some crew members as the shore management's response to this problem. However, it was found that the underlying problem was not a scientific arrangement in facing the challenge of the essential workloads that must be completed by crews. Some other crew members mentioned their request to the shore management for several more crew members. Meanwhile, they also repeated the management's reply: it was difficult to add one more crew member given the manning policy and cost consideration.

An overall impression on the four ships on which I sailed was that, more or less, crew members experienced the problems of hectic sailing schedules and long working hours. As a result, crew fatigue was commonly observed on board. For example, a second officer talked about his own experience:

> Sometimes, as I sat there, I could have gone asleep. When I was on watch duty, I stood there and I would suddenly fall asleep. Then suddenly I would wake up. I walked back and forth, back and forth … no other choices. (2O, S3 C2)

The hectic schedule, long working hours and subsequent fatigue could pose a severe threat to a crew's OHS. On S1 C1, a finger injury was witnessed and it was detailed in my field notes (S1 C1, 8 February 2010). The injured motorman blamed himself for his negligence, but the rest of the crew were compassionate towards him, saying it was caused by fatigue – he had participated in tank washing and had been on continuous duty for 18 hours that day. Similar problems of OHSM were highlighted in the literature. Woolfson and Calite (2008) analysed recent cross-industrial survey data in Lithuania, one of the most recent members of the EU, and found that a worker's workload intensification, long working hours and poor working conditions are common. Cooke and Rohleder (2006, p.221) observed that short-term pressures to keep a production schedule could result in risky operations and unsafe conditions being tolerated. Oltedal and Wadsworth (2010, p.616) argued that hectic operations could 'trespass safety boundaries'. They further argued that production pressure could lead to operation shortcuts being sought, and a high workload could limit workers' time for submitting safety reports. Oltedal and McArthur (2011) identified that the demand for efficiency was one of the most common reasons for procedural violations. My study in the

Chinese chemical shipping industry showed similar results to those of previous studies in some other industries (further discussion will be offered in section 9.2.2).

Having discussed the shore-ship communication during a ship's sailing and its effect on a crew's OHSM practice on board, I will now shift my focus to the ship visit scenario, i.e., communication in a face-to-face mode.

6.3 COMMUNICATION DURING A SHIP VISIT

In the previous section, the discussion centred mainly on technology-based communication. For the management, ship visit communication was equally important and it is this that will be examined in this section. In a similar way, the discussion will be made with reference to the perspectives of the shore management as well as the crew on board to explore how ship visit communication could affect safe practice on board.

6.3.1 The Management

A ship visit is an important part of the work for the shore management in order to maintain safe working conditions on board. The visit was usually taken by superintendents or managers (including senior managers such as the designated person as stated in section 4.3) responsible for the safe operation and management of ships. In general, the shore interview data showed that the management had a positive commitment to shipboard OHSM.

The Need for Face-to-Face Communication

In land-based industries, managers might be able to visit and oversee workplaces any time they wish. In the context of the shipping industry, the case is different. Communication, to a great extent, depends on technological means, such as satellite telephone and emails, due to the physical distance between shore and ship. From the management perspective, the physical distance is a significant feature that could affect mutual communication. For instance, a manager said:

> The (role of) technology-based communication with ships is limited. We don't work together with any crew members. What he says face-to-face might not be the same as what he does in reality. For some (crew members), he might speak perfectly, but in practice, his performance would be very different to what he had said. This phenomenon is common. (Safety and Quality Manager, C2)

Another manager expressed a similar view:

> In many circumstances, we are not on the spot (on the ship). We don't fully understand what on earth has happened. It is likely that crews hide facts. It

happens on many ships. (Crewing Vice Manager, C1)

On board the ships, keeping work records was an essential requirement of the company's management system. Meanwhile, many of these records should be reported to the shore management; they serve as evidence of what has been done by the crew on board. They would also be checked during various internal and external inspections. For this reason, the importance of written records was highlighted and the authenticity of them would be verified by the management during a ship visit:

> Usually they (crew) did the paperwork very well. It's not possible always to see the facts just from the paperwork. Therefore, the role of a ship visit is prominent. Superintendents are required to visit ships at regular intervals to see whether it (the paperwork) is true, or whether the expected outcome is achieved. (Marine Engineering Superintendent, C2)

The interviews with the shore management suggested there was unanimous agreement regarding the necessity of conducting ship visits. For the management, it was not enough for them only to judge the reality based on 'listening' – there was a need to 'see'. They thought that the real problems could not be identified if the management remained in the shore office and knew ships only by their oral or written reports. Perrow (1999) addressed a similar case of a captain not being kept under surveillance, and therefore, there was a chance of untrue records being written in the ship's log. This raised the issue of mutual trust between shore and ship. An empirical study by Bhattacharya (2012) in the international shipping industry showed a low level of trust between managers and their seafaring colleagues. He found that the physical distance between shore and ship hindered the development of trust between them. Haney (1986) found that a trusting relationship goes hand-in-hand with effective communication performance. Klauss and Bass (1982, p.23) also argued that 'trust influences the quality, level, content, and directionality of communication'. This study showed a similar situation, as identified in the literature review. In this study, this trust crisis existed between the shore management and the ships' crews suggesting the need for face-to-face communication.

In addition, Leiss (2004) pointed out that large-scale incidents over the past decade have clearly demonstrated the need for face-to-face communication. The study of shore industries showed face-to-face interaction accounts for 25 to 70 percent of working time depending on the job type (Whittaker *et al.*, 1994), while in the shipping industry, face-to-face communication between management and crews apparently obtained a much lower percentage. This further suggests the need for more face-to-face interaction. Hence, it

was understandable why 'seeing is believing' was so important from the management's perspective. Through a ship visit, the real working conditions could be observed, understood and verified, which, in theory, would overcome the distance barrier that isolated shore from ship.

Understanding Real Situation

A general impression that emerged from the data was that visitors would try to communicate more with crew members during a ship visit. On board ship, visitors would usually first conduct a general observation of the ship's working conditions. An initial (informal) conversation would be established whenever a crew member was met. Their communication with senior officers was essential. Visitors might also talk to individual crew members, who had been randomly or purposefully selected. Sometimes, there might be a plenary meeting among some or all of the crew, if time allowed. The purpose was to perceive the crew's work attitudes and understand the all-around situation on board. For instance, one manager said:

> (When) I was on board, I would talk with them (crew members). I did this by chatting freely so that I could understand the situation on board. The first-hand information could be obtained through on-the-spot communication. (Marine Engineering Manager, C2)

The acquisition of first-hand workplace information was elaborated upon further by a superintendent:

> When I was on the site (ship), I could understand the situation in a way which was not possible in the office. (The crew's) performance, work attitudes, work outcome and their (sense of) responsibility could all be understood. (Quality and Safety Superintendent, C1)

In general, the first-hand information collected from ship visits helped facilitate management's decision making on issues relating to OHSM. In the name of 'ship safety', some visitors focused on a crew's team work. For example, a senior manager (also the designated person, as defined in the management system) said:

> We focus on the stability of the crew as a team on board. If a captain was responsible and competent, messy conditions would not happen. If the team's capability and sense of responsibility were weak, the (messy) conditions would be unavoidable. (Vice General Manager, C2)

The data suggested that the stability of team work on board was an essential condition that affected a ship's safety. Teare *et al.* (1997) stated that a team concept is central to the development of system-based management. Efficient teamwork was seen as a key element

for improving business process performance as well as organisational performance (Telleria *et al.*, 2002, p.338). The importance of aligning teamwork with a company's management policy and the measurement of team performance has been stressed by many researchers, such as Zigon (1997) and Zobal (1998). Therefore, the company management's concern regarding a crew's teamwork was understandable. Sometimes, if there was a conflict raised among the crew, it would be of particular concern to the management. Alper *et al.* (2000) noted that conflict is a major disturbing factor within an organisational team. A team could be demoralised and unable to perform effectively if a conflict were not dealt with successfully (ibid). A marine engineering manager gave his view on this issue:

> If there were a conflict among crew members, we would go to solve it. We would try to get them to work together as a whole. Now the crew's minds are flexible and some lack a sense of responsibility. If we made an effort and there was no improvement, we would (consider the need to) change the person (s). (Marine Engineering Manager, C2)

Apart from the concern regarding a crew's teamwork, in a similar sense, individual crew members were given equal consideration. For example, a superintendent explained:

> All the work on board is done by them. I would try to talk to them individually. If their thoughts and spiritual status were unstable, shipboard safety would be seriously affected. (Marine Engineering Superintendent C1)

Another superintendent further added:

> If one (of the crew) showed prejudice against our company, his psychological status would be unstable. This would certainly have a negative impact on the safety of his work. (Quality and Safety Superintendent, C1)

Although the management tended to communicate more with senior officers, some mentioned that they would also talk with low ranking crew members, such as junior officers or ratings:

> We would also ask low ranking crew members: How do senior officers treat you? What are your feelings? If you have had a quarrel with others, what was the reason…? (Marine Affairs Manager, C1)

In this sub-section, the data showed that understanding the real situation on board a ship was highlighted by the management during a ship visit. They obtained first-hand information that could help the management make adequate decisions in relation to the arrangement of OHSM on board the ship. The study further revealed that the management showed equal concern about the crew's work performance, which will be discussed below.

Assessing a Crew's Work

Apart from understanding what was really happening on board, another focus during a ship visit was to assess the crew's work performance and outcome. The word 'inspection' was predominantly used by the shore management as part of their work during a ship visit. For example, a marine affairs manager talked about his work on board:

> We would see whether the crew's operation could meet the company's requirements, national and international regulations, or industrial guidelines. We would not know this until we had carried out an inspection. (Marine Affairs Manager, C1)

For a marine engineering manager, his focus was the machinery in the engine room:

> If a person is tired, he needs rest. The machine is 'tired'; it also needs maintenance. In the management system, it is clearly stated how regularly a machine should be maintained. For us, it is (to see) whether the maintenance work is done properly or not. (Marine Engineering Manager, C1)

Apart from focusing on operation and maintenance work, during a ship visit, the written records would also be checked comprehensively, since they were treated as equally important, as explained by a marine affairs manager:

> The daily work records … like a kid doing his homework … If we didn't go to check and ask, we could not understand whether the recorded work had been done or whether the records were right. If the crew knew that we would often go to check, they would keep better and neater records. Furthermore, if they only had records and did not do the maintenance work, the equipment's real status was there, which would indicate that their records were false. (Marine Affairs Manager, C2)

In general, nearly 'all the items' that could affect a ship's safe operation would be 'gone through' (Marine Affairs Superintendent, C1). The data suggested shipboard inspections were comprehensive and thorough. Certainly, crew members were heavily involved in the process of the safety inspection. They were usually asked to 'show up' for an interview. As a problem was identified, it would be talked about in more detail. A superintendent depicted the situation as viewed by the management:

> During the inspection, we would communicate more with the crew, letting them acknowledge that it was true they had not done the work well. This plays an active role in improving a crew's work. It is the purpose of the management. (Marine Engineering Superintendent, C2)

Some of the data showed that the management dealt with the problems in a mild way, which was similar to the situation stated in section 5.3.1. For example, a manager described one occasion of his visit to a ship, during which a safety net was found not to be wrapped around the gangway:

> We stayed there and asked them to make corrections. We didn't mean to blame them, but to tell them in a clear way. Why should a safety net be placed? Let them

> understand this and do it accordingly, rather than them being forced to do so. (Marine Engineering Manager, C2)

However, some other members of the shore management expressed their serious attitudes during their inspection. For example, a superintendent stated:

> If we found problems, we would take corresponding measures, such as giving critiques or instructions, or suggesting a change of personnel. (Marine Affairs Superintendent, C2)

In extreme cases, the person involved could be sacked unconditionally due to his 'incompetence' or 'lack of responsibility', as was specifically mentioned by superintendents and managers in both companies. Thus, the role of the shore management's power in managing ships and crews was influential. The study further revealed that the shore management's power was embedded in the reward and punishment schemes that were in place in both companies. It was thought an effective way of 'improving a crew's work performance and enhancing their sense of responsibility' (Marine Affairs Superintendent, C1). In other words, if a crew's performance were not assessed, they would be less active and responsive to shipboard work safety.

In addition, the importance of the oil majors' inspection has already been mentioned in sections 4.2.3 and 5.2.1. It was widely accepted that the oil majors' inspection was highly demanding. To a considerable extent, an internal inspection served for the purpose of passing an external inspection. It was also called a mock inspection or pre-inspection before an external inspection. In order to ensure various external inspections would be passed, an internal inspection was even stricter than an external one:

> If the oil majors' inspection requires us to pass with a score of at least 8, we will ask (the crew) to set a pass at a score of 10. The company's requirement is higher than that of the oil majors. (Marine Affairs Superintendent, C1)

Furthermore, all the oil majors had their own inspection standards rather than acknowledging those of other inspectors, as a result of which more internal and external inspections on chemical ships could be seen. On average, there would be one inspection from an oil major per ship on a quarterly basis in both companies. Hence, the role of the internal inspection in improving internal safety management was highlighted as well the role it played as a dry run for an external inspection.

In section 2.5.2, the importance of management control, management-employee power relations and disciplinary measures applied for OHSM were briefly discussed. It was found

that, more or less, evidence of the involvement of these elements could be seen from the data presented in this section. However, the study revealed that these elements also emerged from the data collected from crew members. They will be further examined in the following section.

6.3.2 The Crew

The previous section showed that, from the management perspective, ship-visit communication was one of the indispensable ways to identify safety problems and ensure safe production. In this section, I will continue to explore from the crew's perspective how this affects crews and their routine work.

The Impact on a Crew

It was discussed in the previous section that ship-visit communication was dominated by safety inspections. On board the four ships, a question was asked regarding what the shore management did during a ship visit. Surprisingly, an immediate response given by many crew was, 'one word: inspection'. During the inspection, the management could observe a crew's performance and question crew members as they wished. As far as the crews were concerned, the shore management had the decisive power over issues relating to shipboard OHSM as well as the crew's work performance appraisal:

> Whether you do well or not, it's up to them (shore management); they give your performance appraisal. (3O, S1 C1)

Under such conditions, many crew members felt added pressure whenever there was a ship visit by the shore management:

> After all, they are the officials from the shore base. First, they will carry out an inspection; second, they will conduct supervision. For the crew, no matter how well or badly we perform, we will have pressure. (3O, S3 C2)

It was found that such a kind of pressure commonly existed among crew members across different hierarchies. However, the crew members in senior positions seemed to bear more pressure than the rest of them:

> For the senior crew, they all had responsibility over a certain range of work. When our ship called at port and there was a ship visit, the higher the position one had on board, the more pressure one bore. (2O, S2 C1)

The reason was that senior crew members held more responsibility for shipboard OHSM. Although they might not be directly involved in each operational process, they would hold major responsibility if there were a problem identified relating to their work.

Furthermore, the data suggested that the crew's psychological pressure could originate from their fear of a reduction in their income. When an inspection was finished, a ship-visit report would be produced by the visitors. A captain described how it worked:

> The ship-visit report is clear-cut … What was the ship's condition, crew performance and their compliance with the rules…? The (crew's) bonus would be affected (by the report). You could not argue about why you performed badly. The visitors would give you a discounted mark. (Captain, S3 C2)

The result of a ship-visit report served as partial evidence for deciding the distribution of the crew's bonus. In C1, it was called 'performance pay', while in C2, it was called 'a safety bonus'. Apart from the impact of the safety bonus, it was found that the inspection result could affect crew members' prospects of promotion. In order to be able to be promoted to a higher position, a crew member's licensing upgrading exam had to be arranged by their company. The arrangement would be prioritised by those whose performance was assessed as good by the shore management. The inspection result of a ship visit was a key indicator of a crew member's performance. This was particularly true in C1, where a majority of crew members had a long-term contract with their company:

> If your work was not done well and it was found out, this would affect the company's consideration for (the arrangement of) your license upgrading examination … affect your promotion. They are all relevant. (2O, S2 C1)

More directly, the impact of a crew member's job arrangement was also significant. For instance, a senior engineer gave the following reason:

> If a senior officer does not perform well, it is impossible for him to be promoted to captain or chief engineer. A superintendent can decide that a person cannot be a captain (on the ship supervised by him). He has this power, since it involves the shared responsibility. (CE, S2 C1)

The implication is that a superintendent had the decisive power over the appointment of a crew member, particularly a senior officer. This means that even if a chief officer gained a captain's qualification, he might not be able to be appointed to a ship (as a captain) supervised by a superintendent who disliked that person or distrusted his capability.

In C1, if somebody was found to be making mistakes repeatedly, he might not be able to work on his company's ships. Instead, he might be dispatched by the company as an export seafarer to work for another company. This would give the person 'an opportunity' to practise and improve his skills – which was presented as a way of training crew. The crew member could return to work for his company if there was evidence indicating that his

skills had improved. In C2, where crew were recruited mainly from the domestic labour market, the impact was mainly on the continuation of next contract term:

> If a problem was identified by the shore management, their impression of you would be bad. This contract term might not be affected, but (it) would affect the next contract. (2E, S3 C2)

While moderate problems identified by the visitors of the shore management were tolerated, some severe cases would be dealt with seriously. It could lead to the dismissal of a crew member if evidence showed that he lacked a sense of responsibility:

> Last time, when a superintendent visited the ship, a third officer was found by the superintendent to be catnapping in the public room when he was on duty. At that time, the ship was loading cargo. He was deemed to be irresponsible and was asked to leave the ship by the superintendent. (Bosun, S2 C1)

Another example was about the completion of paperwork:

> There was a case previously on this ship. The chief officer did not do much paperwork. When a superintendent came, he did all the paperwork for him (the chief officer). The superintendent did all the written records alone. Then he had enough evidence – the chief officer was not good and was asked to leave (the ship). (4E, S4 C2)

For ratings, if it was found that their work was not done well, it was equally possible that they might be asked to leave the ship. For this reason, many crew distanced themselves from the shore management visitors in the hope of avoiding or reducing any potential negative impact on them. Some crew members expressed their preference for 'sailing the outside world'. Under such a circumstance, the ship was able to avoid the shore management's spot inspection and supervision, and it was seen as an admirable way of escaping management's control.

The Impact on Crew's Work

Apart from the crew's psychological pressure and the fear of their self-interests being affecting, the data further suggested that ship-visit communication could also affect OHSM practice on board.

First, it was found that a ship visit could affect the crew's routine work. In both companies, 'routinisation', or 'normalisation' was their slogan for guiding a crew's daily work, which meant that whenever or wherever there was a ship visit, the crew should maintain normal working order, and should not need to have 'extra-preparations'. The reality was found to be different. Many crew members stated that if they knew that a ship visit had been

scheduled, they would make thorough preparations before the visit. At the very least, shipboard hygienic work would be complete and thorough, since they thought that the visitors would feel unhappy if they saw dirty places on board. Some crew members thought the impact went far beyond cleaning work. A senior officer told of one occasion when his ship called at a port adjacent to his company:

> It's near (the company). The senior management would come. We were very busy. The hygiene in public places or cabins also had to be completed. At least it had to be better than (that) in ordinary time. Most importantly, all the safety-related items would be checked in advance. All the records had to be updated to the latest entry. (CO, S2 C1)

Many crew members insisted that it was essential to leave the visitors with a good impression of the appearance of their ship. From the crew's point of view, the appearance reflected the quality of crew's work. In this sense, the appearance could be explained as what Goffman (1990, p.35) identified as a 'front'. He noted that a 'front' was closely related to the 'manner' of a performance. They both had strong implications for the quality of the performance. In a broad sense, it refers to impression management or self presentation behaviour that serves for the protection of self image or as an attempt to influence others' perception of performers (Wayne and Liden, 1995). Therefore, it was not difficult to understand that a clean appearance in hygiene, equipment status and written records could help reinforce visitors' positive impression of a crew's OHSM work on board their ship.

In addition, it was stated that it was very common for a chemical tanker to have oil majors inspection every year. One of the major purposes of the management's ship visits were to ensure crew's preparatory work was appropriate in order to pass the oil majors' inspection. Some crew referred to the oil majors inspection as a 'big stick' to the company. Everybody from top to bottom in the company was intensively focused on it. For this reason, it could equally affect crew's shipboard routine work. In addition the oil majors inspection was very detailed. It engaged itself with 'every nut and bolt'. A common view held by crew was that their workload was significantly increased:

> In order to meet the standards of both management and the oil majors, everybody should check his own work to see whether the standards have been met. This added significant workload to us. (3O, S3 C2)

The additional workload would be very likely to cause crew fatigue and had noticeable effects on crew's OHS.

Second, during a ship visit, a few senior crew members would accompany visitors to check the work. This could affect some crew members' work and rest time. Some crew commented that a ship visit could disturb their normal working rhythm:

> For me, I do not expect their visit. If they came for an inspection, my work plan would be disturbed. I would shift my focus to the inspection. If they saw a valve plate was missing, we would be asked to fix it. On board a ship, my opinion was that, first of all, I should guarantee equipment safety. For those tasks that affected little on safety, I would leave it aside to a later stage. But when they came, they would see those (superficial) as 'real problems'. They would disturb my work arrangement (3E, S3 C2).

One second engineer described his experience during a shore management's ship visit:

> I did my work according to my plan. Some problems could not be solved immediately. At that time, a superintendent came; he saw the workplace (mess) and said, 'Why didn't you do this and that?' He thought my work was a mess. In fact, I was busy with maintenance work of the main engine. I could not solve all the problems at once. My work plan was disturbed. (2E, S1 C1)

Although he tried to explain it to the visitor, it seemed of little use. His safety bonus was deducted for that month. Work interruption has emerged as a workplace concern today (Garrett and Danziger, 2008). Excessive workplace communication was identified as the most common source of work interruption (Mark *et al.*, 2005). Workplace interruption could disrupt a worker's thought processes, distract a worker's focus, and hinder work flow and productivity (Gillie and Broadbent, 1989). In a similar sense, the ship visit was regarded as work interruption by a number of crew members. Most commonly, their normal scheduled work was interrupted by the visit.

Third, as has been mentioned several times already, written records were one of the major areas that would be checked by the visitors of the shore management. The study showed that many crew members placed a particular focus on the completion of work records:

> Before their visit, all the accounts and records all have to be updated to the latest entry. There are too many records. Some are really not necessary, but we must complete them. Even though we just wrote the minimum, we would spend significant time on them. (CO, S4 C2)

A captain talked about his work on keeping written records:

> A major part of their visit was to check the records. In my office, I had more than 90 types of written records. If I did 2 to 3 in one day, it would be tiring for me, just to do this. (Captain, S3 C2)

The completion of written records represented a considerable workload for the crew. The study showed a similar situation to one that has been frequently mentioned in the maritime

literature. The plethora of paperwork has been criticised as being a result of the adoption of management systems in shipping organisations (Anderson, 2003; Bailey, 2006; Bhattacharya, 2009). It also contributes to a crew's fatigue (Smith *et al.*, 2006). Many crew members stated that they could only do the paperwork during their off-duty time, since they were too busy during their duty time, when lots of operational tasks needed to be prioritised. Surprisingly, in order to meet the compulsory requirement of completing written records, the data suggested that fabrication of them was common among crew on board ships:

> Sometimes, even when we were on board, we found the records we had made ridiculous. We did fabricate records, but there was no other way (to manage). The visitors check all of them. (2O, S2 C1)

The fabrication of written records was an issue also identified by Bhattacharya (2009) in his study on sailing voyages on board tankers among mixed crews. Therefore, it was certainly not too early to claim that the check of written records could play a significant role in improving OHMS practice on board ships. Actually, many crew members had rather different views on its usefulness in OHSM:

> It is a problem focusing only on (the check of) the written records, but the inspectors did not understand this. They said it was about safety consciousness. They insisted that if the records were not done well, they could not believe safety measures were in place on ships. (CO, S4 C2)

As stated in section 6.3.1, the verification of written records was one of the major tasks during the shore management's ship visit. For the crew, they all seemed to understand the management's intention. The result was that, over time, crews became more careful with their fabricated records. 'Reasonable inference' was applied when completing the records in order to achieve the effect of their 'genuine authenticity'.

In general, the above discussion suggests that the impact of a ship visit on a crew's work was noticeable. Unfortunately, from the crew's perspective, it does not show that there was any positive impact on the promotion of OHSM on board ships. This was particularly true when crews described the difference before and after a ship visit:

> Before a ship visit, most (of the crew) became tense. Some tasks would be done in (crew members') spare time, including written records, and provisional deck painting work (in order) that deck would look like new. After the visit, it would happen that the work became delayed, and the crew would not work as seriously as before. (2O, S2 C1)

In a similar sense, a senior officer described the difference before and after a ship visit:

> During the two to three months when the superintendents were absent, the work would become disarticulated (disconnected). The extent of care, the records ... all

would be discounted. (CO, S1 C1)

The data suggested a remarkable contrast in a crew's work in terms of whether there was a ship visit. Under such circumstances, the management would not be able to perceive what really went on aboard ships. Thus, it could be concluded that ship visits did not play a significant role in improving OHSM practice on board ships.

Lower Ranking Crew: No Common Ground for Talking

In general, most crew members expressed the view that, during a ship visit, the shore management would communicate mainly with the ship leaders, such as the captain, chief engineer, chief officer or second engineer, while the lower ranking crew, i.e., junior officers and ratings, had fewer opportunities to communicate with the management:

> If the company's leaders came, mostly they would communicate with the captain or chief engineer. It was very rare for them to communicate with ordinary crew members. (3E, S1 C1)

> They would have contact with the crew at management level (senior officers), not the operational (junior officers) and supportive level (ratings). The hierarchy on board was strict. (CE, S4 C2)

Furthermore, some crew members, particularly those from the lower ranks, doubted the shore management's intention of communicating with them:

> I don't know whether the company's managers really want to communicate with lower ranking crew members. I guess they didn't have this intention. (2O, S1 C1)

It was found that the main feature affecting communication was the 'inequality of the hierarchy':

> We have little contact with the management during the visit. When we communicate with each other, we hope we are at the same level. But we are not at the same level as them (the shore management). The hierarchical gap does exist. There is a sense of repulsion. We don't even eat together. The cook sends the separately cooked dishes to the captain's cabin (for them). (Rating-2, S2 C1)

The interview data also showed that the low ranking crew's willingness to communicate with company visitors was also weak. The gap in social status seemed to be an inherent divide that affected their mutual communication. The following extract from an interview dialogue demonstrates this:

> Q: Would they (superintendents) talk to you?
> A: No.
> Q: Would you hope to talk with them?
> A: I don't want to chat with them...to be honest.
> Q: Why?
> A: Sometimes, if we speak more it is worse than if we speak less. There is a

> Chinese saying: When drinking with a bosom friend, a thousand cups will still be little; when the conversation gets disagreeable, to say one word more is a waste of breath. We lack any common ground with them. We do more work while speak fewer words; I feel this would be safe. (Chief Motorman, S4 C2)

On the whole, the data suggested that lower ranking crew members had little communication with the shore management during a ship visit. Some commented that it would be sufficient for them to complete their tasks as assigned by their superiors. Some stated that if their own self interests were not affected, they would not want to have any communication with the shore managers or superintendents.

6.4 SUMMARY

It was widely agreed by both the shore management and the crews that safety was the lifeline of their company, and both companies dealt with OHSM seriously. In this Chapter, the shore-to-ship communication for management control was extensively discussed. The discussion was based on two typical situations (scenarios): one was at a ship's sailing, and the other was during a ship visit. Both the shore management's and the crews' perspectives were considered as a consequence of the communication. Specifically, its impact on shipboard OHSM was examined. In terms of communication at a ship's sailing, the shore management agreed that the ship leader's absolute decision making power over issues relating to the safety of a ship's operation and management should be maintained, which was also consistent with the requirements of the management systems in both companies. Meanwhile, the shore management also showed they had reservations about this entitled power. From a crew's perspective, it was found that in both companies, senior officers' decision making was significantly affected and compromised by management's instructions and orders. Particularly, the data showed that a captain was often put in a dilemma deciding between seeking shelter from adverse natural conditions or following management instructions to keep his ship sailing. The examination of a captain's authority showed a very limited role in implementing shipboard health and safety management. In general, the study showed that a crew's autonomy was rather limited, and could not be guaranteed despite what was stated in the management systems.

Apart from the impact on senior officers, the impact on the rest of the crew was also noticeable. Within shipboard hierarchy, senior officers onboard ship actually played an intermediary role in conveying orders or instructions given by the shore management. The execution of sailing orders given by the shore management was mainly undertaken by the

rest of the crew. This study showed that work intensification and longer working hours were commonly observed on all four ships of both companies. In general, crew members bore considerable psychological as well as physical pressures due to centralised decision making.

Regarding ship visits, the management in both companies expressed their eagerness for communicating with crew members. For one thing, the management could verify the facts that were reported by the crew. For another, it was the only opportunity for the management to communicate with the crew face-to-face, enabling the management to have an in-depth understanding of what really went on and what safety-related problems there were on board. Thus, regular ship visits were highly expected by the shore management. However, from the crew's perspective, the ship visit communication did not help improve shipboard OHSM. Significantly, the visit was characterised as a safety inspection and resulted in considerable psychological pressure on crews; the impact on their routine work and personal interests was equally significant. The study showed that ship visits did not help promote the communication about shipboard safety problems between the management and crew. In particular, the data revealed that there was poor communication between the lower ranking crew members and the shore management.

In conclusion to Chapter 5, the study raised the issue of whether the management's commitment to safety is more formal than real. In this Chapter, the study showed a dichotomy of purposes of communication between management and crew, especially when interference with rapid sailing times is involved. As a consequence, the examination of the communication for management control showed that many safety-related problems were not communicated and remained unsolved, and the identified psychological and physical pressures had a considerable negative impact on shipboard OHSM practice. On the whole, evidence from this Chapter suggests that the asserted management commitment to safety was questionable. Further discussion is offered in Chapter 9.

CHAPTER 7 (SHIP-TO-SHORE) COMMUNICATION FOR SAFETY REPORTING

7.1 INTRODUCTION

The previous two chapters addressed mainly shore-to-ship communication and its implications for shipboard OHSM. This chapter will shift the focus to ship-to-shore communication. According to the ISM Code and the safety management systems of shipping companies, ship-to-shore communication (reporting) should be clearly defined. In the companies studied, all ships were required to report all safety related issues to the shore management on a regular basis. The communication helps the management understand a ship's working conditions. In the management system in C1, there were four reports: Ship Equipment Deficiency Report, Nonconformity Report, Accident Report, and Near-miss Report. In C2, there were six reports: Nonconformity Report, Report of Ship Inspection Deficiencies, Monthly Report for Rectifying Ship's Deficiencies Found on Previous Month's Inspection, Initial Report on Shipboard Emergencies, Accident/Incident Follow-up Report, and Near-miss Report. In principle, three general categories were covered, as specified in the ISM Code: 'non-conformities', 'accidents' and 'hazardous situations', as mentioned in section 2.5.1. Normally, they should be reported in writing. In some urgent cases, an initial report should be made by telephone followed by a written one. The purpose of this chapter is to examine the attitudes of the shore management and crews towards reporting those critical safety events. Furthermore, the immediate factors affecting a crew's reporting will be explored.

7.2 THE MANAGEMENT

In terms of ship-to-shore reporting, the shore management in both companies showed a strong interest in encouraging crews to report; paradoxically however, it was also found that the shore management teams were not willing to see many reports from ships. This will be explained below.

7.2.1 'We Encourage Reporting'

Usually, a shipboard self-inspection had to be conducted before a report was made. Its positive role was highlighted by the management in both companies. The report was seen as a 'window' for viewing shipboard working conditions and a 'channel' for improving the management of the company's fleet. In other words, it could have considerable implications

for promoting OHSM on board ships. The study showed that the management in both companies held a similar policy and attitude of encouragement toward a crew's reporting of safety issues. Some managers clearly expressed the view that safety problems were not caused by 'the lack of sense of responsibility' or 'personal negligence'. Therefore, there was no reason to hesitate. For example, a marine affairs manager explained:

> If you (crew) can identify potential problems, and report them to the company, that is very good. The company will reward you for reporting. There is no any negative effect on individuals. (Marine Affairs Manager, C1)

Predominantly, the value of such reports was confirmed by the shore management. It was regarded as a good practice that could make significant contributions to OHSM in both companies. For example, a marine engineering superintendent said:

> For a major case, there is a need for the company to take countermeasures. For a minor one, it could remind others to be more careful. It's a good practice. It's for the good of safety management. Everybody hopes that a ship is in a safe condition. (Marine Engineering Superintendent, C1)

Some shore interviewees even commented that timely reporting of safety issues could 'avoid unnecessary economic losses'. As for the consequences of reporting, the management frequently referred to the phrase 'non-blame attitude' or 'non-blame culture' to indicate their standpoint on safety reporting. For instance, a marine affairs superintendent said:

> Encourage. The company always advocates a non-blame policy. You (crew) may report whatever you want. We hope you could report ten near-misses, but we don't want to see one accident. (Marine Affairs Superintendent, C2)

In C1, there was a special reward policy for reporting near misses. Some 200 Yuan RMB would be rewarded to the person reporting one near miss. If a captain could report several near misses successively, 500 Yuan RMB would be rewarded.

In general, it could be seen that safety reporting was encouraged by the shore management in both companies, irrespective of what the issue was, as long as it had safety implications for OHSM on board ships. 'Fair treatment' was also announced by the management in dealing with a report received from a ship. For example, the following paragraph was extracted from the management system of C1:

> The company guarantees that the person who makes the report will not be treated unfairly; instead, the company will give awards to those who are helpful in improving the company's safety management and environmental protection.

A few managers emphasised 'the need for reporting' by interpreting the relationship

between reporting and the allocation of accountability. For example, a marine engineering manager explained:

> (If) you (crew) hide problems; you do not fully understand the essence of the ISM Code and the management system. If you found a problem and made a report, it would be the company who would be held responsible. If you hid the problem but it was identified by the company, you would take full responsibility. (Marine Engineering Manager, C1)

Therefore, the data suggested that the management's stance in both companies was clear: if a safety problem was not reported, and it represented a hidden threat to the crew's as well as to the ship's safety, that is, if it was likely to 'develop into an accident sooner or later' which could lead to 'damaging consequences' (Marine Affairs Superintendent, C2) – and both the management and the crew were unwilling to see accidents occur. It seems that it was commonly believed that safety reporting could help promote OHSM on board ships.

The role of safety reporting in OHSM was discussed in section 2.5.3 in the literature chapter. First, the reported problems could help management to understand the condition of OHSM on board ships. The management could therefore support crew members to solve the reported problems. Different kinds of shore support were widely discussed in Chapter 5. Second, based on the procedure of a management system, the reported items could trigger further investigation to identify the underlying reasons causing those problems. The identified reasons could help in the establishment of proper preventative measures and prevent the reoccurrence of some problems. Third, the reporting was based on the procedure of an OHSMS. The proper functioning of a safety-reporting subsystem within an OHSMS is essential for the successful OHSM in any organisation (Havold, 2000). Therefore, it could be seen that, from the management's perspective, safety reporting in the shipping industry played an important role in promoting OHSM on board ships. Nevertheless, although the reporting was encouraged and a non-blame policy was emphasised by the management in both companies, my data further indicated that the management had a special concern for crews' what it regarded as over-reporting on safety, which will be discussed next.

7.2.2 'The Less (Reporting), the Better'

Despite the management's encouragement of safety reporting, the analysis of data indicated another view: the less reporting, the better. It was found that the management in both companies were unwilling to countenance more safety-related problems reported from

ships, since they thought less reporting meant better shipboard management:

> Generally if they (crews) don't report any problems, it's good news. It signifies that ship's management is good. Every aspect on board is good. (Marine Affairs Manager, C2)

> If a captain doesn't report any problems, and nor does the chief engineer, this ship is perfect. It shows that everything is very good. (Marine Engineering Superintendent, C1)

The two quotations show that there was a common understanding among the company's management that the 'number of reported events' was an important indicator of the quality of shipboard OHSM. In other words, a lower number of reports implied a higher level quality of OHSM.

Ships sail one voyage after another. One of the main duties for the shore management was to monitor and assess whether a voyage plan had been successfully and properly implemented. From their perspective, the successful completion of a voyage meant less reporting of any safety-related problems. For example, a senior manager commented:

> If you (a crew) completed a voyage, and hadn't reported any incidents/accidents, this would mean that the ship hadn't caused any major economic loss to the company. It represents the successful completion of the voyage. (Marine Affairs Manager, C2)

Thus, it became clear that, in contrast to the attitude of encouragement illustrated in the previous sub-section, the 'sub-agenda' that emerged was that the reporting of safety problems was considered undesirable by the shore management. The review of the literature shows there is debate about whether low reporting rates indicate a better quality of OHSM at workplaces (Cox and Lippel, 2008; Balka and Freilich, 2008). Reason's research (1997) at an organisational level found that a low reporting frequency may suggest an 'image of safety'. However, he warned that it might not reflect the reality, and as a consequence, the improvement of workplace safety would be considerably compromised. So far, the discussion has been from the management's perspective. From the crew's perspective, the data showed a rather different picture in terms of their understanding of the reporting of various safety related issues. These will be detailed next.

7.3 THE CREW

In general, crews in both companies demonstrated a clear understanding of the company's 'reporting encouragement' policy. Also, they were aware of the general principle of 'seeking truth from the fact'. However, it was found that crews behaved differently in

practice. In this section, the immediate factors affecting a crew's safety reporting will be explored from the crew's perspective. The conclusion is drawn on the basis of the data analysis.

7.3.1 The Need for Reporting

According to the requirements of the management systems of both companies, safety reporting covered a wide range of OHSM activities on board a ship. Each of the crew members on board a ship had the responsibility to report safety-related events to the shore management no matter how minor they were – even if they were a 'pin' or 'wire' for fixing or lashing a lifeboat, as long as they had implications for improving shipboard work safety:

> According to the requirement (of the management system), even a tiny problem should be reported. Even if it had occurred today, and would be repaired tomorrow, it should also be written and reported. (3E, S4 C2)

This requirement was commonly seen in other OHSMSs, such as that in Esso's safety management manual (Hopkins, 2000). In general, the importance of making such reports was acknowledged by many crew members during the interviews:

> The report must be made. Self-inspection reports must be made regularly. If you don't have any deficiencies (to report), is it realistic? (3E, S2 C1)

Self inspection was one of the major OHSM activities on board a ship. The inspection result should be reported to the shore management at regular intervals. In general, the crew had the common sense to know that, more or less, there were certain safety-related problems on board a ship. In a few cases, it might be that, indeed, there were no deficiencies to be identified on a ship, but that did not mean that the ship was perfect:

> If you cannot find out the problems yourselves, it doesn't mean you are 100 percent perfect. If you dared to claim so, the shore management would come to assess and inspect ... to see whether you actually were 100 percent safe. (Bosun, S1 C1)

The alternative conclusion to be drawn from the lack of any reports of safety issues could be a crew's failure to identify safety-related problems, which further pointed to their incompetence regarding onboard safety management. Therefore, safety reporting was an indispensable feature of a crew's routine work and was one of the main channels for improving shipboard OHSM.

In addition, safety reports would also be checked by inspectors from external bodies, such as oil majors or CDI (see section 4.2.3). They served as key evidence of communication for

problem reporting and solving. During my fieldwork on S1 C1, a chief officer told the following story. Several years ago, the company had asked this ship to hide all the deficiency reports (treated as internal confidential documents) prior to an external inspection. But the absence of any deficiency reports was judged by the external inspectors to be a deficiency. In recent years, safety reporting has been emphasised by both companies:

> This area (reporting) involves an oil majors' inspection. If we have deficiencies, they must be reported. Then where are the written records? (CO, S4 C2)

Therefore, the data suggested the importance of reporting safety-related problems to the shore management at regular intervals to comply with not only the requirement of the management system but also that of external inspections, such as those from oil majors.

Although the need for safety reporting was well recognised by many crew members, the study identified some immediate factors that affected a crew's decision regarding reporting. The examination of those factors will be conducted along the three formal reporting systems, as stated in the ISM Code, as well as in the management systems of both companies, namely, 'nonconformity reporting', 'accident reporting', and 'hazardous situations reporting'.

7.3.2 Nonconformity Reporting

In both companies, the definition of nonconformity in section 1.1.9 in the ISM Code was adopted equally in their management systems, which has been given in section 2.5.3 (safety reporting). Often, nonconformity was applied interchangeably with the term 'deficiency'. In the management system in C1, the detailed nonconformity events included deficiencies identified in a PSC/FSC inspection, deficiencies identified during an oil majors' inspection and dock inspection, the required shore support not being provided, deficiencies identified by the captain's daily supervision, deficiencies identified by a company's inspection, and deficiencies identified during self-inspection. In the management system in C2, the following events were principally specified: nonconformity in a system document, violation of operational procedures, failure to provide satisfactory service to customers, and failure of a ship's equipment that affected the safe operation of the ship and jeopardised the environment. According to the procedures of the management systems in both companies, the nonconformity cases, as a major part of the 'monthly self-inspection reports', had to be reported to the shore management at monthly intervals. The data analysis showed that

crews had various considerations before a deficiency report was made. They will be detailed as follows.

Incompetence of Safety Management

From the crew's perspective, reporting nonconformity cases could imply that the crew's safety management on board was poor:

> If you (crew) report them, it is certainly not good for you. It has the implication that your job has not been done well. (4E, S4 C2)

Thus, crews were sensitive about the number of reported cases. In other words, if a lot of cases were reported, this would affect the management's impressions of the crew on that ship. The shore management might think that the ship's leaders were not competent in their work:

> If you (crew) reported more, the shore management would have second thoughts: this ship often makes such reports, while other ships don't do so. The shore management would think your ship had safety problems and that the ship's leaders were no good. (2E, S2 C1)

Furthermore, the company's criteria for judging a ship leader's competence also included his ability at problem solving. For example, a third officer said:

> If you solve (problems) perfectly, it shows that your individual competence is good. If you cannot, and you need support from the shore management, it might mean that your individual competence is poor. Others would have second thoughts about you (3O, S2 C1).

There was discussion in section 5.2.2 about the company's commitment to problem solving. However, the above comment suggests that if a deficiency were not solved by the crew and reported to the company, it could mean that the crew's competency at problem solving was poor. In this context, the shore management's 'second thought' would mean 'doubting the crew's competence'. In order to make a good impression on the shore management, some safety related problems were not reported even if they had not been solved by the crew.

In addition, as mentioned in different sections in the data chapters, one of the major concerns for the shore management was the need to pass external inspections, particularly those by the oil majors. The self-reported deficiencies would be easily observed by an external inspector, which could lead to further enquiry into the deficiencies. In other words, an inspector could not easily identify whether a deficiency had not been written. Under such a circumstance, there was a chance of a 'near miss' unless it was incidentally targeted by an inspector. For example, a second engineer explained:

> It (reporting deficiencies) is not good for external inspections. If an inspector found that you had many deficiency reports, he would doubt your ship's management and check in more detail. (2E, S2 C1)

Thus, it could be seen that the recorded deficiencies could affect an inspector's judgement of a ship's OHSM status. Furthermore, if a deficiency report was made in a written mode, it would have to be dealt with according to the relevant procedure in the management system. Follow-up measures would have to be taken, and written records would also have to be maintained accordingly. Thus, it could make things worse if a deficiency could not be rectified entirely. It would be same as the self-exposure of safety problems to an inspector. As a result, some cases were intentionally excluded from the reports.

The Impact on Shore Management

Apart from a company's doubts about a crew's competence regarding onboard safety management, the potential negative impact on the shore management was considered by crew members when making reports. In section 5.3, the impact of the support to crew by the shore management was discussed. Given the positive sides of such support, some new deficiencies might subsequently emerge. Thus, there was a need to report those deficiencies. Under such a circumstance, a crew's reports could potentially affect the company's performance evaluation of the managers or superintendents in charge of a particular ship. The following interview extract was selected to show this:

> A: There is much internal knowledge about what to report. Although some problems are severe, we should not report them. Some problems are minor, but we must report them. You might not understand…
> Q: What does that mean?
> A: Take, for instance, some equipment problems such as a pump or valves … If a superintendent in charge could not supply them on board duly, or the supplied spare parts had quality problems, we (crew) could not directly report the problems to the company.
> Q: Why?
> A: Each time a problem is reported, a senior manager or designated person might hold a meeting to review the problem and find a solution. If we made a report, the superintendent in charge would be questioned. He would have to explain the reason and might be reprimanded (by the manager). (CO, S1 C1)

Some crew members clearly expressed the view that they did not want their immediate superior to be blamed because of their reports, particularly in consideration of managers' or superintendents' decisive power over crew arrangements, as discussed in section 6.3.2. Furthermore, given that the reported items would be investigated thoroughly by senior managers or designated persons of the company, crew members were worried that the

reported problems would lead senior managers to think that the department in charge of the ship had failed in its managerial and supervisory duty. For example, a senior officer said:

> For the Marine Affairs Department, they wanted ships to report fewer (problems), right? If you (ship) reported more (deficiencies), it would not be good for the company senior managers to see them. It also involves the shore management departments in the problem. (CO, S3 C2)

In order to avoid the shore managers or superintendents being blamed by senior managers, a crew's pre-communication with them was usually seen to be an initial step before a formal written deficiency report was sent. The reporting would be 'guided' by the manager or superintendent responsible for that ship regarding what and how to report. For example, a senior officer described the issues as follows:

> Sometimes, the superintendent hopes you (crew) report by telephone; sometimes, they hope you report by written (report). If you (communicate) through a written report directly, it's very formal. His (superintendent's) leader would also be able to see it, and it would affect the superintendent himself. This might not help us. So we would make a telephone call to him to make the report in advance in order to avoid annoying him. (CO, S2 C1)

For some other crew members, the 'importance' of pre-communication was not entirely understood. As a result, they might be blamed by the shore management for their reports. The following is an example of this:

> One of the lifeboat's engines could not be started by mechanical operation. The deficiency was reported to the company. Later, a superintendent contacted the ship, asking the captain to have a careful look at the problem before reporting it. It was a hint that the ship should not have reported this item. (2E, S3 C2)

Furthermore, it was found that some deficiency reports could annoy the shore management. The shore management did not want some inherent deficiencies, particularly inherent equipment problems, to be reported. Some examples of this were observed during my trips on the four ships, which included the cargo pump problem on S1 C1, the tank heating system on S2 C1, and the anchoring system on S4 C2. They all had functional deficiencies although they appeared to work as usual. All those problems caused a significant inconvenience for the crew's work. However, the management did not want the problems to be reported in written form:

> If you submitted a report about an inherent deficiency, they might ask you, 'Should the ship be scrapped to eliminate the problem?' (2E, S2 C1)

A significant cost would be involved in order to solve those problems if they were dealt with according to the formal procedure set out in the safety management system. Thus, it was not difficult to understand why the shore management were unhappy to see such

reports. In some cases, the crew were even thought to have troubled their company intentionally. For example, a captain expressed his view:

> If I reported a deficiency that could not be solved easily by the company, the company might think that I was intentionally making things difficult. (Captain, S4 C2)

From the data, it could be seen that hesitation about reporting did exist among crews. In all, it was not beneficial to crews if the shore management were offended by the reports. Although pre-communication was observed before any deficiency reports were made to the company, these fundamental deficiencies were by no means solved, which remained a potential threat to shipboard OHSM.

Deduction of Safety Bonus

The research further found that deficiency reporting could affect the crew's safety bonus. On board the ships, all the work was well structured across different hierarchical levels, and each position was assigned a specific duty in terms of the division of labour. Therefore, it was quite easy to identify to whom a deficiency related. The reported items would be assessed by the shore management as evidence when issuing or deducting a crew's safety bonus in accordance with the company's reward and punishment scheme. In C1, the safety bonus comprised several separate items, such as a one-hundred days safety contest bonus and a fuel oil consumption-saving reward. In C2, it amounted to 10 percent of a crew member's total salary. During my field work, many crew members expressed concern for their safety bonus:

> We came for the purpose of making money, so we worry they might deduct our bonus. For some deficiencies, they would say it's our responsibility. But, we would not think so. (Pumpman, S3 C2)

The issue of the safety bonus was basically decided by the shore management. The reports were one of the major grounds for deciding how much to award to a crew. Although some crew members felt this was 'unfair', as illustrated in the data, they could take only whatever was given to them. In C1, the salary reform had been launched just two years previously. It was linked more closely with the result of the company's assessment of the crew's performance. The deficiency reports were part of the evidence used to assess their performance. One captain mentioned that there were often deductions from his salary by his company:

> Now it is tricky. If a problem was reported, my money would be deducted. Personally, my salary was often docked by the company. Usually they deducted me 1,000 Yuan RMB a month. (Captain, S1 C1)

In C1, the liability for each deficiency particularly indicated the ship leaders' failure to play a proper supervisory role on board ship. Thus, it was used to promote ship leaders' sense of responsibility in shipboard OHSM. Understandably, the impact of deficiency reports on a crew member's income could discourage them from voluntary reporting. If a deficiency was a major one, there would be more negative impacts on the crew member involved. Then, some situations described in section 6.3.2 would also apply.

7.3.3 Accident Reporting

If a nonconformity case developed into an accident, it would be dealt with more seriously. Both companies' management systems showed that they adopted a similar definition of the term 'accident', as was given in section 2.5.3 (safety reporting). Should an accident happen on board, the crew should first respond according to the emergency action procedures, which included immediate telephone contact with the shore management. In C1, the form 'Accident Report' should be filled out and sent to the company. The report should include an initial cause analysis of the accident and any relevant written and photographic evidence. In C2, the report was made at two sequential stages, the first 'Initial Report on Shipboard Emergencies' and the second 'Accident/Incident Follow-up Report'.

In both companies, the scales of accidents were well structured and defined. In C1, all the accidents were divided into four scales: catastrophe, major accident, average accident and minor accident. In C2, they were divided into five scales: from A to E, A standing for the most severe while E was the least severe. To illustrate this, the different scales of an accident in C2 are given (Table 6). If the consequence of an accident met any one of the three index standards, i.e., casualties, property loss and environmental impact, the corresponding scale was applied.

Table 6: Categories of Accidents

Consequences of Accidents			
Scale	Casualties	Property Loss	Environmental Impact
A	Fatalities	Explosion/Collision/Grounding etc. Total Loss ≥ 200,000 Yuan[xiii]	Major oil spill≥ 100BBLS[xiv] or uncontrolled gas release＞ 10 tons or equivalent

[xiii] Yuan: a base unit of Chinese currency. 1 Yuan = 0.095 British Pounds (6 Feb 2011)

B	DAFWC[xv]	Ship Not under Control etc. Total Loss ≥ 100, 000 but <200,000 Yuan	Regional environment impact, caused subpoena/punishment that could harm company's credibility
C	RWI[xvi]	Total Loss < 100,000 Yuan but ≥ 50,000 Yuan	Regional environment impact and violation of environmental law at moderate level, having potential impact on company's credibility
D	Medical Treatment Injury	Total Loss < 50,000 Yuan but ≥ 5,000 Yuan	No environmental impact, minor violation of environmental law and minor impact on company's credibility
E	First Aid Case	< 5,000 Yuan	LoC[xvii] < 1 BBL, no spill on deck or to environment

In general, most crew members agreed that an accident had to be reported to the shore management according to the reporting procedures. In the previous sub-section, various factors affecting a crew's nonconformity reporting were discussed. However, the impact of an accident on a crew became significant provided that one could not escape the charge of work negligence. Apart from the deduction of safety bonus, rank promotion, job appointment and security would all be affected (see section 6.3.2 for the impact on a crew). A common view was that if an accident occurred, for whatever reason, it meant someone 'had not done his work well'. In C1, one of the special disciplines applied to the crew member who caused an accident was rank degradation. A junior officer gave an example:

> One of our company's ships collided with a small ship, and the latter was sunk. Investigation showed that it was the chief officer's problem. That chief officer was degraded to second officer. (2O, S2 C1)

In C2, the common practice was to terminate an employment contract immediately after an accident. During my field work on both ships in C2, a few similar cases were heard, for example, the 'collision with wharf' (S3 C2) and the 'loss of anchor' accidents (S4 C2). The crew member who caused the accident would never be employed by the company again. Despite the fact that an accident could not be covered up and it had to be reported, the data showed that some of the accident reports could still be biased, particularly for minor accidents.

[xiv] Barrel

[xv] DAFWC: Days Away from Work Cases

[xvi] Restricted Work Injury

[xvii] Loss of Cargo

Concern of Liability

According to the management systems of both companies, all the accidents had to be immediately reported to the shore management. Simply, the consequences could not be handled properly without the intervention of the management. An accident report would be drafted by the head of the department on board and verified by the captain. Principally, the report was meant to be based on the facts. However, this was not always the case in practice. On some occasions, a report could be purposefully biased. For example, I met the chief engineer on S3 C2. Before he had come to C2, he had worked for C1 for almost thirty years. He talked about his observations and experiences in dealing with an accident report:

> In the past, when I was in C1, the way of dealing with this was: first, it (report) should not link to your responsibility; second, (it) should not be attributed to your colleagues (responsibility); and third, (it) should not be linked to your company leaders (responsibility). If you throw (discharge) all the responsibilities to your company, do you mean that the shore management is not effective? Definitely, this is not good. Then what to do? Try to find some causes from yourself, and some from the external natural environment. The rationale is not to affect anyone, or to affect everybody as little as possible. (CE, S3 C2)

A similar view was held by some other senior officers who had experienced one or more accidents. In general, the common feeling for drafting an accident report was that there was a tendency to attribute the accident to more objective causes rather than human-error related factors. Once an accident had been reported, it would be investigated by the company. The initial report would be seriously considered given the unavailability of a real-time monitoring process on board. It would serve as important evidence for the 'distribution of responsibility' for the persons involved in the accident. Therefore, it was understandable that the wording of the report was of particular concern for the crew.

'Violation of Procedures'

After an accident had been reported to the shore management, an investigation team might be formed for further investigation depending on the nature of the accident. In the management systems, provisions were made to guide the investigation. In C1, it was stated specifically that the focus of any accident investigation should be on the crew's compliance with procedure and their competence. The research showed that the 'perceived investigation result' would not encourage a crew's reporting:

> Basically, as for the investigation results, more than 90 percent (of accidents) were caused by the violation of operational procedures. They (shore management) thought if an accident was not caused by the crew's violation of procedures, it would not happen. If you read many circulars, they are all about a crew's violation of operational procedures ... He he! (Scornful laughter) (3E, S1 C1)

Apparently, this situation discouraged crews from making honest accident reports. Although it was clearly stated that an accident must be reported to the company, it was found that the minor accidents (C1) and accidents located in Category E (Table 6) in C2 – the personal injury accidents – were most likely to be underreported. My field notes recorded a few personal injuries on the four ships, and none of them were reported. Among those, one bloody injury case was described:

> The motorman showed his finger covered in blood. The finger had been hit by a roller in the engine room, and his thumbnail had come off. He pressed the root of the finger that had been hurt, gnashing his teeth and showing pain on his face. (Field Notes, S1 C1, 8 February 2010)

The cut was treated and shore medical assistance was called for on arrival at a foreign port. On the returning voyage, I asked the second engineer how the shore management had responded. He said the accident had not been reported. Then I raised further questions:

> Q: How do you deal with the shore commission fees?
> A: (In the name of) seeing a doctor.
> Q: If it was reported, how would it be dealt with?
> A: If it was reported, the company would think it was mainly because of the violation of procedures. The safety bonus would be deducted from top to bottom (all crew). But the real cause was fatigue. (2E, S1 C1)

On board S1 C1, almost all the crew members I met thought the injury was caused by fatigue (also see section 6.2.3 on hectic schedules and long working hours). The crew's past experience told them that if the accident were reported, the result would be, as a Chinese proverb says, 'to lift a stone to drop it onto one's own feet'. Therefore, the crew would prefer not to report an accident. The literature review showed that the 'human error' investigation approach (Psarros *et al.*, 2010; Oltedal and McArthur, 2011) or the 'person-oriented' focus (Oltedal and Wadsworth, 2010) might lead to negligence in the identification of 'real causal factors', which achieved only 'limited success' in reducing unsafe practices. The example described above showed a similar situation to those described in the literature. The study showed that the 'perceived' investigation result significantly affected the crew's willingness to report. Typically, the consequence was that a significant number of minor personal injury accidents were not reported, and the shore management would not be 'informed' unless an accident caused a loss of property or environmental pollution.

7.3.4 Hazardous Situation Reporting

In parallel with reporting nonconformities and accidents, reporting hazardous situations

received equal emphasis. Following the implementation of the ISM Code, IMO has made dedicated efforts regarding this. In practice, the term 'near miss' was widely used to represent hazardous situations that occur on board ship. In the MSC[xviii]/Circ.1015 (2001), shipping companies were urged to promote 'reporting near misses'. This requirement was made even clearer in the MSC-MEPC[xix]/Circ.7 (2008) 'Guidance on Near-miss Reporting', in which the investigation of near misses was regarded as 'an integral component of continuous improvement in the management systems'. The purpose of any investigation was to learn lessons from the reported cases, since a near miss could have the same underlying causes as an accident. In addition, the two circulars highlighted the importance of 'anonymisation', the 'avoidance of punitive action' and 'confidentiality' in dealing with near miss reports.

Both companies adopted the definition of a near miss from the IMO recommendations (see section 2.5.3 safety reporting). However, reporting near misses was a recent development of the management systems in both companies in response to the requirement of the IMO recommendations as well as the oil majors' inspections. In line with the requirement, both companies adopted an anonymised approach in order to encourage more near-miss reporting. Not only could this help protect individual privacy, but also it could be in line with the spirit of the company's non-blame policy (see section 7.2.1). In C1, a list of hazardous situations was given in the management system, which included, but was not limited to, the following events:

- ✧ Unsafe practices in daily safety management;
- ✧ Unsafe practices or procedural violations in safety-related operation;
- ✧ Incompletion of operational measures in safety operations;
- ✧ Violation of procedures in shipboard maintenance;
- ✧ Bad operational habits in personal OHS;
- ✧ Incompletion of the corrective measures to non-conformities, incidents or near misses.

On each of the two ships in C1, there was one box labelled 'NEAR MISS' in a public place. One was put in the meeting room and the other was in the crew canteen, meaning both were easily visible. It was used for the collection of voluntary reports by whoever on board witnessed an unsafe act or behaviour; the report should be made anonymously. The purpose

[xviii] MSC: Maritime Safety Committee
[xix] MEPC: Marine Environment Protection Committee

was to ‘protect’ those persons who made the report and those who were involved. In C1, the report was requested as soon as a near miss was identified on board, while in C2, there was a compulsory requirement that at least two near misses be reported every month, the logic behind this being that the shore management did not believe that in a month there would be no near miss occurrences on board. The data suggested that there were some misgivings in crew members’ minds about making near miss reports. These will be discussed below.

Potential Affect on Individuals

It was just mentioned, a near miss report was made anonymously to both companies. However, some crew members were still worried by such an ‘anonymised’ approach in terms of its effectiveness. For example, a second officer said:

> It was said to be anonymous … but which ship sent this report ... about which case ... they (shore management) could still know who you were. It’s useless for anonymity. Even if you didn't write your name, the management could still know it’s you. (2O, S1 C1)

The easy identification of ‘who caused the case’ was commonly recognised by crew. The reason was that the work on board was ‘one radish; one whole’, a saying often mentioned by them, meaning that there were very few overlaps in their respective duty tasks. Under such a situation, the anonymisation seemed to be essentially ineffective.

It was agreed by both management and crews that reporting would not affect a crew member’s safety bonus, and it was even rewarded by C1 (see section 7.2.1). However, the data showed that it could have an indirect effect on a crew member’s job arrangements and promotion. This view existed among crews in both companies. It was particularly true in C1 with which most crew members had long-term contracts. For example, a junior engineer said:

> It would affect my future work. For example, the loss of electricity on board, we might not report, since it didn't cause any losses. If it was reported, it would have a negative impact on me. My future work and promotion would definitely be affected. So the impact would be severe. (3E, S2 C1)

It has been mentioned that a near miss would also be assessed and investigated by the shore management in both companies. If the result of the investigation was judged as valuable for improving a ship’s safety, it would be circulated among the company’s fleet. Therefore, many ships’ crews in the company would know about the case. It was mentioned that it would be easy for the shore management to identify who was the cause of the near miss; similarly, the person who caused it could be easily identified by his fellow colleagues. For

example, a second engineer expressed his worry about the potential impact on his personal reputation:

> Even though the person's name is not mentioned, other colleagues could know by guessing, since they would know who the second engineer is on that ship. It has a bad affect on the person. (2E, S2 C1)

The importance of 'face' at work for Chinese people has been discussed in the literature (see section 2.7.2). It could mean that the loss of face would be known to his colleagues. Therefore, it becomes clear that reporting near misses could have a potential unfavourable impact on individual crew members.

Detrimental to Crew Solidarity

Moreover, the research found that the potential impact could go beyond individual crew members; it could affect solidarity among the crew. A senior officer explained:

> When reporting near misses, the captain would consider our interests. The captain is the same as us. We are arranged to work together. We are colleagues, brothers. When on shore, the hierarchical position gap doesn't exist anymore. (CO, S1 C1)

It could be seen that the negative impact on a crew's relationships was considered before a report was made. There is an ancient Chinese saying which says that 'harmony matters'. Harmonious relationships are valued by the Chinese, and this applies equally in the organisational context. The 'avoidance of conflict and need for harmony', as part of the core values of Confucianism, are upheld by the Chinese people (Fang, 1999) (also see section 2.7.2). However, a harmonious relationship could be disrupted if such a report were submitted to the shore management. An example was given below:

> If you made such a report, you would have offended that person. We all know each other and are not willing to offend others. (Rating -1, S4 C2)

The data analysis also showed that some major near misses were not reported:

> Once, the ship was sailing seaward, and the third officer was on duty. The captain went to the bridge ... (he) could not see the sky (ahead). There was a very big ship ahead, and the view was blocked by that ship – You could imagine how big it was! The foreign ship was a stand-on vessel (according to the collision regulation). It would not give way to us. The captain immediately took control … Luckily, an accident was avoided. You guess, would the captain report it to the company? Certainly, he would not. If he reported it, he would harm the third officer. The third officer would definitely finish (his career). (CO, S2 C1)

This account shows that a considerable sense of solidarity existed among Chinese crews. In a similar way, one chief engineer expressed his concern regarding young crew members:

> The young crew members ... they are very kind usually. One might show

> dangerous behaviour due to carelessness. I met this situation on this ship. Should I kick him out? Then how should I deal with it? Try my best to remedy the situation, rather than something else (reporting). (CE, S3 C2)

In general, the importance of maintaining solidarity on board ship was strongly desired by most Chinese crew members. The study showed a strong presence of 'in-group collectivism' on board ships, which could affect a ship leader's decision to report near misses to the shore management.

Rule Restriction

In addition, the study found that another factor that limited the crews' near miss reporting was the rules of the management systems. It has been argued that both companies encouraged near miss reporting. Meanwhile, the management systems of the two companies specified that the reported cases should not be repetitions of those that had been reported previously from any of the ships. The reason was that all ships had been informed of those cases, and the repeated reporting meant a lack of care regarding the company's notifications, which equally meant the lack of sense of responsibility. For instance, a senior officer said:

> All the near misses that have been reported previously should not be repeated. If it has occurred once and it occurs a second time, then it proves that your (ship's) management was not good. (CO, S1 C1)

The restraint of this rule led to a gradual reduction in reportable cases:

> Generally, the number of reportable near misses was reduced. We have almost completed reporting whatever we are able to think of. We have almost finished reporting, because we should not repeat the mistakes we have made previously. (Captain, S1 C1)

The reoccurrence of a particular case could signify where there was a vulnerability that was more likely to cause an incident or accident. This constraint of this rule could lead to the company missing out on valuable statistical data. At the beginning of this sub-section, it was stated that, in C2, two near misses should be reported on a monthly basis. The assumption was that it was impossible for there to be no such case on a big ship. However, from the crew's perspective, they showed a different understanding of this rule. In order to meet the requirement, some crew members described how they responded to this requirement:

> We have to submit a report even if there are no such cases. What should we report if there are no (such cases)? (As a result), the only way is to think and fabricate… . (CO, S4 C2)

> For (the purpose of) collecting cases, the captain asked the crew whenever he met us. (The captain said), 'Report a case to me today'… (with a facial expression of joking). (2O, S3 C2)

In general, the response of the crews on the two ships in C2 showed that they did not take this requirement seriously in their work practice. The data presented above suggest the failure of the requirements of non-repetition reporting and compulsory near-miss reporting. As a consequence, the shore management's evaluation of the paper logs reported by crews was of very limited value for OHSM on board ships.

During my field trips on board the four ships, some near misses were observed and noted down in the field notes, which included the leak of Phenol gas on S1 C1, Pxylene sample-taking on S2 C1, the mooring operation on S3 C2, and cargo tank washing on S4 C2. The last one, the cargo tank washing operation, is given below to illustrate:

> It was a fine day sailing at sea. The tank washing work was arranged among the crew on the deck department. I decided to participate in their work … I saw deck ratings wearing only common yarn gloves. The washing required crew members to go down to the bottom of the tanks, which were more than 10 meters high, but nobody wore any protective apparatus on their heads (faces). I could feel the pesticide-like smell from time to time. During the break, I kept asking whether this cargo was toxic. They said, yes. One of the ratings showed me his thumb. His skin had become white and chapped … When I climbed out of the cargo tank, I felt faint. The skin on my fingers felt hot. I remembered that I had touched the mop when sweeping the floor… . (Field Notes, S4 C2, 9 April 2010)

Although many of the cases observed on board the ships had the features of a near miss as defined previously, the data suggested that they were mostly neglected by the crews and by no means were they reported to the shore management. They occurred in a crew's day-to-day operations and the crew gave them no further thought. Working at risk became part of their lives on board.

7.3.5 Under-reporting and Biased Reporting

In section 7.3.1, it was shown that the need for safety reporting was understood by many crew members. However, in practice, it was carried out in a different way. In sections 7.3.2, 7.3.3, and 7.3.4, the immediate factors that affected the reporting of nonconformities, accidents and hazardous situation were widely identified. They all suggest that OHSM-related problems were not factually and fully reported. Instead, a significant number of them were underreported or biased-reported, which will be further discussed below.

The interview data with the crew members showed that a significant number of them showed reservations regarding the question 'whether all the safety-related problems were fully reported according to the facts'. Surprisingly, I was given a negative answer. In reality, the data suggested that very few of them were willing to participate in voluntary reporting. The low ranking crew showed a significant disinterest in reporting. They thought it was unnecessary to make such reports:

> The reporting is done by the captain. Whether he reports to the shore management, it's up to him. The lower ranking crew would not make a report. It's unnecessary to talk about this. It is nothing to do with my job. (Motorman, S4 C2)

This motorman thought the reporting was done mainly by senior officers and so it was irrelevant to his work. A rating also showed an indifferent attitude towards reporting near misses:

> The near miss ... It didn't have any real consequences. We feel it has passed and there is no need to report it. What is it for? (Rating, S3 C2)

The research by Bailey *et al.* (2007) identified different levels of risk perception in the maritime industry, and lower ranking crew members also showed a lower level of risk perception, which was similar to the findings of this study. Regarding the officers, they were supposed to be more active and were obliged to submit reports. In a similar way, the data suggested that voluntary reporting was rare in both companies. A captain described the gap between what the shore management expected and what the crew actually thought:

> It is very likely they will not submit a report. They (shore management) are leaders and they want to know everything about us: Don't hide anything. But it is difficult to do as they wish. (Captain, S3 C2)

A senior engineer felt he was placed in a dilemma about whether a problem should be reported, since making a report meant the problem could be solved soon. Otherwise, there would be trouble:

> If a problem was reported, it would have to be solved: You (crew) completed a report ... you knew it was wrong and you didn't solve it … not only would the crew be in trouble, but also the company would be in trouble. It was very easy to be identified by inspectors. Since some problems could not be solved by the crew alone, a flexible way for the Chinese was not to write (down the problems). (CE, S1 C1)

In general, it could be seen that a balance would be considered in terms of deciding whether a problem should be reported. These issues were widely discussed in sections 7.3.2 to 7.3.4.

In addition, it was found that crew fluidity could also weaken a crew's willingness to make reports. This appeared to be more evident on two ships in C2 where many crew members were employed on short-term contracts. For example, one senior bosun talked about his thirty years of experience as a seafarer:

> In general, I would not submit a report. We are freelance seafarers. We work here and there. It (problem) would not be reported until there was an accident. In that situation, you could not avoid (reporting). (Bosun, S4 C2)

The data showed that the employment of short-term contract seafarers could contribute to the under-reporting of safety problems and thereafter weaken the outcome of OHSM in the shipping industry. The reason is given in section 8.3.5 (The fluidity of seafaring occupations).

As a result, 'self-digestion' was referred to by some crew members in dealing with safety-related problems on board ships. They might not report a problem until a significant consequence occurred. For example, a chief officer said:

> It was rare (to report). If you reported (it) to the shore management, it would cause trouble. Usually, it would be digested on board unless it caused serious consequences. (CO, S3 C2)

Although it was not stated what kind of troubles these were, the data analysis between sections 7.3.2 and 7.3.4 was able to shed some light on this. In brief, the discussion in this sub-section showed the under-reporting of safety related problems was very common in crews' reporting practice.

As well as under-reporting, it was found that biased reporting existed on ships in both companies. The data showed that crew members, particularly senior officers, would take 'deliberate considerations' prior to sending any reports to the shore management. For example, a captain talked about the so-called 'principle' that guided his reporting:

> Basically for us, the principle of reporting is to report only the good and not the bad, to avoid critical points and to dwell on the trivial. (Captain, S1 C1)

As mentioned above, it was accepted that it was impossible to have no safety problems on board at all. However, some crew members commented that the reporting could be done in an alternative way. For example, a chief officer said:

> We had certain considerations. The ship could not report all the issues (to the shore management). Also, (the ship) could not report nothing. We could report some innocuous cases. (CO, S4 C2)

Among those ships that did submit reports, the data showed that crews tended to report 'innocuous' cases which were of less significance to the OHSM. This view was commonly held among many crew members:

> Sometimes, if it is hard to find anything, I just randomly write something unimportant, for example, I find something that is going to expire. (2O, S2 C1)

> In the kitchen, the flour was put on the fire prevention station, where it was not allowed. Let's make a report. (Bosun, S2 C1)

Some other similar examples given by crew members included the belated correction of nautical charts (2O, S4 C2), incorrect recording in the logbook (2E, S3 C2) etc. The study showed that many reported items were deliberately 'designed' by the crew. For one thing, the reporting was submitting with the aim of meeting the shore management's requirement; for another, the reported items were, in nature, of little significance to the OHSM on board ships. The data suggested that the real situation about a crew's day-to-day work practice was not truly reflected in the reports.

7.4 SUMMARY

This chapter dealt with ship-to-shore safety reporting (communication). The study was made by examining the perspectives of both the shore managements and the crew. From the management's perspective, they showed an open and encouraging attitude toward crews' safety reporting. Equally, the encouragement of reporting was also written in the management systems of both companies. However, from the crews' perspective, although they recognised that there was a need for reporting, they did not act in accordance with this. The data analysis was based on the examination of three major reporting requirements: nonconformity reporting, accident reporting and hazardous situations reporting. The reasons that affected those reporting requirements were explored.

Regarding the nonconformity reporting, the study showed that crews worried that the reporting could lead management to blame them for their bad safety arrangements on board. Crews also worried that the reporting could offend some of the shore management. Furthermore, crews were worried that the reporting could lead to a reduction in their safety bonus. As for the accident reporting, the data showed that this depended on the nature of the accident. For those accidents that resulted in considerable consequences, although they had to be reported, there was still the possibility of biased reporting in an attempt to reduce the negative impact on the crew members involved. Minor accidents, particularly personal

injuries, were least likely to be reported. Crews' past experiences of the result of shore management's investigation did not encourage them to make any reports. With regard to hazardous situations reporting, given the company's anonymous approach and non-blame policy, the study showed that the reporting could potentially affect a crew's self-interests and their solidarity on board. The rule's restriction could also affect a crew's reporting.

The findings after examining the three kinds of reporting showed that a significant gap existed between the management's expectations and a crew's work practices. To a great extent, management's expectations for safety reporting were unmet. The study revealed that a significant number of unsafe events remained unreported, under-reported and reported with bias. The study also explained why crews tended to report insignificant safety-related events rather than those that actually occurred in their daily work. Although less reporting and the reporting of insignificant events could create an 'image of safety', it was superficial to a large extent and did not help proper OHSM. Apparently, the under-reporting and biased reporting led to the accumulation of more safety-related problems that were not then solved, and so could contribute to a higher possibility of the occurrence of a major accident. Further discussion in relation to its negative consequences in relation to OHSM is given in Chapter 9.

CHAPTER 8 (SHIP-TO-SHORE) COMMUNICATION FOR SAFETY SUGGESTIONS

8.1 INTRODUCTION

Following the discussion in the previous chapter on safety issue reporting, this chapter will examine ship-to-shore communication for safety suggestions, as stated in section 2.5.5. Reporting safety suggestions were both required and encouraged by the shore management in both companies. They included, but were not limited to, regular review reports of the management systems and safety practices that could help improve OHSM on board ships. This chapter will explore the immediate factors affecting crews' reporting of safety suggestions. In addition, the impact on OHSM practice will be discussed. First, the shore management's attitude is examined; this is followed by a general discussion of the crews' response. The findings will then be summarised.

8.2 THE MANAGEMENT

From the discussion in the previous chapters, it is not difficult to see that the shore management in both companies had a strong desire to improve OHSM on board their ships. There was much evidence that the shore management valued crews' suggestions that might improve OHSM.

8.2.1 Improvement of the Management System

In order to encourage crews' participation in the improvement of OHSM on board ships, certain measures were in place in both companies. A captain's review report was a formal report that achieved this objective. In both companies, this review report needed to be made at regular intervals. In C1, a ship's captain was required to make such a report every six months. However, if he worked for less than the specified period, a review would have to be completed before he left a ship. The captain was required to organise review meetings among crew members to assess the real effect of the management system on board. They included, but were not limited to, the operationalisation of the management system, the crew's level of satisfaction with the shore-based support and the deficiencies of the management system. Particularly, the crew's comments and suggestions for the improvement of the management system were requested. The following reason was given by a manager:

> After all, who are the persons who implement (the system)? – The crew

> themselves. If the crew thought some rules were impracticable, it would be difficult for them to follow them. If we (shore management) did not follow the crew's suggestions, the result would be bad. So we must change. There is a need to collect the crew's comments and suggestions. (Safety and Quality Manager, C2)

In a similar way, a marine engineering manager highlighted the role of the management system in maintaining a ship's safety as well as the role of the crew in improving the system:

> In a shipping company, a management system is essential. If the system is incomplete, a crew's onboard work would be compromised. Very likely, a ship's safety would be seriously affected. As soon as a review report was sent to shore office, the senior management would organise with us to discuss the reported items. If the crew's suggestions and opinions were reasonable, the management system would be modified. It is to control safety fundamentally. (Marine Engineering Manager, C1)

It could easily be seen that the shore management in both companies showed their open attitudes toward the improvement of their management systems. They all agreed that crews should be fully consulted before any revision was made. Meanwhile, some other shore interviewees expressed the view that the revision of the management systems was led mainly by the shore management. In particular, the shore management's access to various resources was highlighted:

> We provided channels (of communication) for crews, but the revision of the system was mainly done by the shore management. The management is in charge of tracing changes in international regulations, the latest safety requirements and standards. (Marine Affairs Superintendent, C2)

The data showed that some shore interviewees acknowledged that their work was done 'appropriately'. Some others commented that it could be 'troublesome' if a management system was frequently revised, since it involved 'many ships' and the 'replacement of many materials'. In general, many of them agreed that the revision of the management system should be given with the highest priority, given that a revision involved a significant workload.

8.2.2 Reasonable Suggestions

Apart from the crew's participation in the revision of the management systems, an anonymised questionnaire survey was another approach which was identified as aiding the improvement of OHSM on board ships. The interview data showed that such a kind of survey was conducted regularly by both companies for the purpose of gathering 'reasonable suggestions' from crews. Typically, when a ship called at a domestic port, the shore

management would have an opportunity to visit the ship and distribute questionnaires among the crew. In C1, a quarterly- or six-monthly based questionnaire survey would be carried out while in C2, irregular surveys would be done whenever it was considered necessary. Essentially, there would be one arranged by the end of each year. As a result of the survey, the commonly addressed areas would be reviewed and discussed by the shore management. For example, in C1, a superintendent described his company's practice as follows:

> When a ship called at a domestic port, we might go to the ship for a survey. We would issue a questionnaire to the crew, and they would be requested to complete it anonymously. The company values crews' opinions in improving work safety. The company would pay more attention to the areas frequently mentioned by crews. (Quality and Safety Superintendent, C1)

In addition, in C1, there was a dedicated column on the company's webpage asking crews to contribute whatever was potentially valuable for the improvement of shipboard OHSM. This was open to all crews to access whenever they wanted. In order to encourage crews' active participation, C1 would give some material awards, while C2 would give a bonus reward provided that a suggestion was assessed as being of real value. A marine affairs manager gave one example of a crew reporting their good practice to their company:

> Crews report their safety comments or suggestions to the captain. The captain reports all of them to the shore office. Once a ship called at a port and the ship reported a suggestion for the ship's operation in that port. The shore management found it was very good and it was distributed to all ships. It was to share others' experience to improve ship's safety management. (Marine Affairs Manager, C2)

In general, it was found from the interviews with the shore management in both companies that their attitude of encouraging crews to make more safety suggestions was perceived in a similar way to that of the safety reporting discussed in section 7.2.1. Given the examples provided by the management, the data clearly suggested that there existed a significant gap between the management's expectations and crews' thoughts. The underlying factors will be further explored below.

8.3 THE CREW

The above discussion was from the shore management's perspective. However, the data collected from ships showed that the situation was different from the crews' perspective. The research found that crews' willingness to report suggestions was affected by various factors. These will all be discussed in this section.

8.3.1 The Managerial Influence

Provided that a crew was willing to make suggestions, the data showed that the communication (reporting) could be influenced by the responses of the shore management.

Response to the Revision of the System

The previous section argued from the management's perspective that the ongoing revision of the management system played an important role in improving onboard OHSM practice. The study on board ships in both companies showed that their management systems had not improved. Many crew members complained that too many written reports needed to be made to the shore management:

> Today, this ship has a problem relating to tank washing, and the relevant inspection forms are sent onboard. Tomorrow, that ship has a collision accident at sea, and the correspondent inspection forms are also sent on board. Consequently, there is a huge stack ... too many (reports) need to be submitted. (Captain, S2 C1)

This was particularly true in C1. Apart from the reports specified in the management system, ships also participated in additional safety-related activities, such as the 'Great Safety Inspection Activity' organised by its parent company. In response to its requirement, a significant number of extra written reports needed to be produced and sent to the shore management.

Apart from 'redundant' reporting items, the problem of 'repetition' in the reports was also identified. For example, a chief engineer said:

> There is much repetitive content. For example, for the deficiency report and the self-inspection report, the contents are similar. They are complicated and troublesome. We suggest revising it. (CE, S2 C1)

In general, there were strong appeals from crews to reduce redundant reports – they should be submitted in 'a simplified mode'. But the shore management's response to their suggestions was discouraging:

> The suggestions were given to the management … generally there would be no response to us. Till now, a long (period of) time has passed, and nothing has changed. There is no other way. (Captain, S2 C1)

> We raised the point to the shore management, but there was no response. Our suggestions have been of little use. (3E, S4 C2)

As a result, some crew members evaluated the reporting system as a 'mixed and messy dish'. In the shipboard interviews, the question was also asked why company management showed so little concern for crews' suggestions about simplifying the reporting procedures.

Some interesting points were raised by crew members. One was that the shore management treated the management system as a 'showcase' of its company, equal to one's appearance. The management wanted to show its customers as well as external inspectors their excellence in OHSM. The management wanted to show them that its management system had achieved a certain degree of 'theoretical depth'. Given this consideration, the management system should indicate a certain level of complexity and breadth of coverage. Therefore, the shore management did not want to simplify the management system of the company. As a result, many crew members referred to their management systems as a 'theory', rather than a practical guide for their daily work. The data analysis aided understanding of the 'difficulties' inherent in any simplification of the management system. The final decision was made mainly by the shore management rather than by the crew. The situation was similar to that expressed by a senior officer: 'We made suggestions, rather than participating' (CO, S3 C2). The study showed that crews' participation in the revision of the management systems in both companies was limited.

Response to Reporting Good Practice

The discussion above showed there was a perception that the crews' suggestions on improving the management systems were not considered seriously by the shore management. Similarly, the data also showed that nor was crews' reporting good safe practice well received by the shore management in both companies. For example, a captain described in detail why it would be reasonable to adopt his suggestion and how it would help to improve shipboard OHSM:

> When I was on another ship as a chief officer, (I found that) the tank washing pipes were separated from each tank by one valve. It had been found that if the pressure in a tank was high, the lubricant in the hydraulic system connected by the pipes would be easily leaked out onto the deck. I noticed that this problem could cause more severe problems if the pressure in two tanks was different and when the valve coincidentally had problems. We reported this to the shore management and suggested that one more valve should be added. But so far, there has been no response at all. Perhaps they have their own ideas. Up to now, the ship still keeps the original arrangement. (Captain, S2 C1)

The company's no-response attitude disappointed this captain, and he did not make any further suggestions to the shore management. Similar cases were also seen in C2. For example, a second officer said:

> You would make suggestions to the shore management; they would not answer you. Even if you made a good point, it might not be considered by them. Even if you thought it was right, it was not right in their eyes. So eventually, many of us were not willing to make any suggestions. (2O, S3 C2)

In the literature, the importance of giving feedback to the person who made the report was highlighted. The investigation of the Esso accident showed that the failure of management to give feedback to workers contributed to their unwillingness to report (Hopkins, 2000). In contrast, the feedback given by the management could indicate a management commitment to safety improvement and could encourage more reports made by workers (ibid). However, my study showed that the management's failure to give feedback to a ship's crew affected the crew's motivation to make any further suggestions which were of potential value to the improvement of OHSM practice.

'Formalistic' Encouragement

The data also showed that, even though the shore management claimed to encourage crews' suggestions, it was regarded as 'formalistic', rather than being in earnest. A bosun had one experience:

> Once, I raised a point (to the shore management), and they asked me to draft a feasible plan. Why was it up to me to produce such a plan? How much would I be paid? (If I could earn that), I would not work as a seafarer … I make reasonable suggestions, and they should consider how to adopt and apply them to improve management. They should not ask me to produce such a plan. (Bosun, S3 C2)

The comment showed that the shore management lacked a sense of sincerity in their consideration of crews' suggestions. Even the management's 'encouragement' policy was doubted by some crew members in both companies; it was regarded only as a temporary formalistic task in order to 'demonstrate' that the shore management valued crews' suggestions. It was just like 'a gust of wind' that disappeared, and would not have any real effect. For example, a second engineer said:

> Every year there are such kinds of activities. We make suggestions to the shore management. But it's hard to say how they value and adopt these suggestions. If their real starting points had been to gather good suggestions from crews for promoting ship management, it would be fairly ok. Actually, they just wanted an activity as a formality, and it would disappear after a short while. It doesn't make sense. The key is to be authentic. (2E, S2 C1)

In C1, the use of the company's website for collecting comments or suggestions was mentioned in section 8.2.2. However, it seemed that it had little effect. Some crew members viewed it as no more than a 'formalistic display':

> I'd read it (website) before. I didn't find anything fresh. It seemed that nobody used it. You made suggestions (to them), and they might give you an explanation by referring to relevant provisions. The rules are clearly stipulated. They do not listen to you. It's impossible for you to change something. It has been (this

situation) for many years. (2O, S1 C1)

Gradually, the idea of making reports faded from crews' minds. Some crew members thought it was nothing to do with them, and some even saw it as causing trouble. For example, a junior officer said:

> I thought a few people would be willing to make suggestions. It is common sense. It's better to have one issue less than one more. It would be all right if I knew this if it didn't affect my own work safety. (3O, S4 C2)

In sections 6.3.2 and 7.3.2, it was clearly stated that shore-ship communication could affect a crew's income. Crews' grievance against the reward and punishment policy could be perceived. The study revealed that it could equally affect a crew's motivation to make constructive suggestions to the shore management:

> Generally, nobody raises such points. The shore management do not care about you much. We do not really like this company. They often deduct our money. They are not beloved by us. They cannot win our hearts and minds. We would not give them good suggestions. (4E, S3 C2)

This sub-section showed that although the shore management appeared to encourage suggestions from crews for the improvement of OHSM, crews were disappointed by the management's no-reply attitude. Many crew members felt that the encouragement was formalistic, as a result of which crews' willingness to make suggestions remained low. This suggests a very limited crew participation in OHSM in both companies.

8.3.2 Shipboard Hierarchy

The study showed that a hierarchical gap existed between senior officers and junior officers or ratings on board. Oltedal and McArthur (2011) argued that the shipboard hierarchy could significantly affect all aspects of the crew's work and social life. In a similar sense, it could affect the crew's willingness to make safety suggestions. The data showed that many crew members worried about offending senior officers even if they had an idea and wanted it to be reported to the shore management:

> If I suggest that the chief officer report it to the shore management, it would be good if he could listen to me. If he doesn't agree with me, he might give me a grey eye all day … be angry with me. On this ship, we don't want to raise any points. (3O, S4 C2)

Even when some crew members dared to make suggestions to the ship's leaders, those suggestions were not given serious consideration by the ship's leaders. As a result, the suggestions were not passed to the shore management. For instance, one junior officer expressed his concern to the captain about the potential risk that might arise from the cargo

pump system:

> The other day, I made suggestions to the captain regarding the arrangements of a thorough inspection of the cargo pump systems, since I could smell (cargo smell) when I was on deck duty (during cargo operation). This is a chemical tanker. It is an obvious threat to our health. I said, 'You (captain) should make a report to the shore management'. He argued that how did I know he hadn't made such a report. But it has been three voyages so far, and it has not been touched. We do not know whether he has made the report or not, or how the company replied. But the key was that it was urgent and the ship should not sail before it has been solved. (2O, S4 C2)

It seemed clear that this junior officer was unhappy with the captain's reply. He expressed his intention to leave this ship soon, since he felt that the ship leader's safety attitudes did not encourage him to work there any longer. He could not take the chance to risk his future on a ship which he thought was unsafe.

As for the ratings, many commented that their work was basically arranged by the heads of departments on board, and they did not make any suggestions to the shore management given their limited knowledge and experience. Sometimes, even though they had a suggestion, it would eventually vanish along the long upward communication chain:

> I gave a suggestion to the bosun. He had no obligation to tell me whether he reported the point to the chief officer, right? Even if the bosun reported it to the chief officer, (it is doubtful) whether the chief reported it to the captain … whether the captain reported it to the shore management … They do not have an obligation to tell me everything. (Rating-2, S4 C2)

Level-by-level reporting was a prescribed communication process, which was commonly accepted by the majority of crews. In other words, skip-level reporting (communication) was an unusual practice in accordance with formal reporting procedures. Therefore, the long communication chain seemed to obstruct ratings' willingness to make any meaningful suggestions to their immediate leaders and eventually the shore management. During my field work on four ships, only one rating (Rating-2, S2 C1) mentioned that his suggestion about duly recycling waste articles on board was adopted by the shore management and he was awarded with a stainless steel kettle. By and large, it could be seen that the ratings' voice seemed to be weak and their views were apparently neglected.

In general, the data indicate that crew members in higher positions could have a noticeable impact on their subordinates' upward communication. This suggests the influence of positional power on communication across the different hierarchical positions of an organisation. Positional power results from a superior's position in the organisational

hierarchy, and it can be normative or coercive (Rajan and Zingales, 2000). It gives higher levels of management the ability to control their subordinates' behaviours (Peiro and Melia, 2003, p.17). Braham and Steffen (2008, p.57) argue that positional power is the result of interplay between the arrangement of positions in an organisation and the decision-making mechanisms in use. In this study, it is clear that the lower ranking crew members' upward communication was hindered by their shipboard immediate superior's positional power. As a consequence, lower ranking crew members' views could not be communicated to the shore management.

8.3.3 The Cultural Elements

In the literature, it was stated that a national culture can have significant influence on people in an organisation and on their management practices (see section 2.7.2). In terms of upward reporting, the study among mixed crew on a Danish fleet showed that crew showed an inactive attitude toward reporting practices and that major differences were identified between different ethnic groups (Hansen *et al*., 2008). It was echoed by a secondary data analysis among crew from different administrations (Ellis *et al.*, 2010). However, a Chinese crew has its own particular considerations which can be explained by Chinese cultural elements. They will be discussed below.

Offending Seniority

This study showed that in two Chinese chemical shipping companies, making suggestions to seniority was regarded as an 'impolite behaviour' to the shore management. As discussed in section 2.7.2, 'respect for hierarchy' is identified as one of the core values of Chinese Confucian culture (Fang, 1999). The importance of maintaining a superior's status is still ingrained in Chinese society (Farh and Cheng, 2000). In this context, the need to avoid offending seniority was considered by many Chinese subordinates (Yang and Zheng, 1989) to be a virtue by which respect for senior colleagues or superiors is particularly important. During the interviews on board ships, some senior officers thought that it was an impolite behaviour if an inferior made a suggestion to his superior:

> The shore management encourages us to give suggestions and advice regarding (the implementation of) safety policy and regulation etc. Actually, it is rare. I haven't done this before. Also very few others (have done). I feel that they (shore management) are professionals. No matter how much I know, I am not an expert. They have many years of experience. If I give them advice … (it might) not be respectful to them. (CE, S2 C1)

Some crew members used the term 'high-end persons' to refer to those 'elites' working in

the shore office in order to distinguish them from those who held higher hierarchical positions in their companies. They did not consider them to be ordinary crew members who could work on and make contributions to the improvement of OHSM. Some other crew members said that they hesitated to make any suggestions to the shore management, since the management might alter their impressions of them and they thought it might even bring them more trouble. Therefore, it could be seen that crew members' fear of offending seniority affected their willingness to make any substantial suggestions to the shore management.

Relationship

The study further showed that the onboard superior-subordinate relationship could also affect crew members' willingness to make suggestions. The relationship, or Guanxi, was briefly mentioned in section 2.7.2. It refers to a special type of relationship built on particular ties and is one of the important social relations in the Chinese context (Yang, 1994). Tsui *et al.* (2000, pp.226 & 228) noted that its cultural roots reside in the Confucian legacy, and it is a dyadic relationship that is based implicitly on 'mutual interest and benefit'. In a situation where the relationship between a superior and a subordinate is not well established, a subordinate is not motivated to report upward. The following comment was selected to illustrate this:

> Many of us didn't want to report...he (one crew member) knew this very well. His practice was even better than that stated in the management system - more reasonable. If his relationship with his superior was not good, he was not willing to report. His superior might not believe him. He did not want to create trouble. The result was that some good practices on board disappeared after years, and we returned to bad practices again. (2E, S3 C2)

As a consequence, some crew members felt that it was a pity that some good practices on board a ship failed to be incorporated into the management system and that they eventually disappeared after turns of a crew's shift.

'Being Conservative'

The research further showed that making suggestions to the shore management was regarded as 'show-off' behaviour by some Chinese crews. Commonly, Chinese crews deal with issues with prudence and do not like to show off as individuals. This view was given by crew members across different hierarchies on board. For example, a captain said:

> Now, the idea of making suggestions to the shore management faded, since it was of no significance. If you talked much to them (shore management), contrarily, it

> gave them the wrong impression that, as captain, you were a bully: 'Don't you think even that I know less than you as a Guide captain/chief engineer'? They would feel that we wanted to show off. They might not consider (our views). So, we are not willing to make such suggestions. I only guarantee this ship is normal and safe. Then it's OK. (Captain, S4 C2)

Some officers also mentioned that they did not want to make any suggestions to the shore management since they did not want to 'create' something new. For example, a senior engineer commented:

> In general, we are reluctant to do so. If we were to write more (to the shore management), it would be good. But it would give others an impression of creating something singular and exceptional, showing off. We don't want to write. (CE, S1 C1)

Similarly, some ratings also stated that they did not like to make suggestions; they also saw it as a way of showing off:

> No. We don't have this kind of idea (giving suggestions). I am not a person who likes to show off. (Rating-1, S4 C2)

In general, many crew members saw making suggestions to the shore management of their companies as show-off behaviour. They did not want to distinguish themselves from other fellow colleagues. This characteristic could be understood to be due to the influence of traditional Chinese culture. Walker *et al.*'s study (1996, p.23) showed that the Chinese are rather conservative and not very outspoken. Zhao (1997) identified that Confucianism itself contained conservative elements of social values. Huat (1989) viewed Confucianism as a conservative doctrine that stressed the maintenance of traditions rather than creation. Being conservative is seen as one of the characteristics of respectable people (Zapalska and Edwards, 2001, p.289). Therefore, it could be seen that the traditional Chinese culture had considerable influence on crews' willingness to make any creative and valuable suggestions to the shore management for the improvement of OHSM practice on board ships.

Flattery

Furthermore, in some cases, it was found that making suggestions was viewed as flattering the shore management. Regier (2007, p.3) interpreted flattery as 'praise, either spontaneous or prepared, given whether earned or not, in order to get something in return'. It could also be explained as being 'for a man to sacrifice to a spirit which does not belong to him' (Zhang, 2000, p.12). In English dictionaries, the word 'flattery' is commonly interpreted as 'excessive compliment'. Lafaytte De Mente (1995) found that in all cultures, flattery was usually accompanied by a hidden agenda, such as wanting minor favours. Flattery has a

long tradition in China and it is an integral part of the Chinese culture (Regier, 2007). Lafaytte De Mente (1995) found that, in the Chinese context, the aim might be to gain a 'special' advantage in relationships. However, it was argued that not all flattery is scheming. Sometimes flattery seeks nothing more than to be liked and noticed (Regier, 2007, p.3). In general, moderate flattery could mean 'courtesy' or 'expressions of goodwill', while genuine flattery would be despised by many Chinese. In this study, the data revealed that some crew members thought there was a strong sense of flattering when 'making reasonable suggestions' to the shore management of their companies. For example, the following dialogue demonstrates this:

> Q: Would any good practices or your personal experience be reported?
> A: No. Here is an example. We dismantled a high pressure oil pump in the main engine. Every time we dismantled it, the oil reservoir and the spacers would always be deformed. Later, we found that the connection fitting was too sharp. Then we made it blunt. It's a good experience.
> Q: Did you report it to the shore management?
> A: No. We would not voluntarily report it. Others would see it as us kissing the leader's ass (flattering), right? Generally, we would not report. (Rating, S2 C1)

The term 'kiss-ass', referring to flattery, is used by the Chinese in daily life to describe a person deliberately wanting to flatter or please somebody for a 'special' purpose. In the literature, 'kiss-ass' was the label given to the worst sorts of flatterer (Regier, 2007, p.8). For this reason, some crew members were reluctant to make suggestions to the shore management. This was disappointing for some crew members who wanted to report their good practices to the shore management.

8.3.4 Trade Unions on board

It was stated in section 2.5.4 in the literature chapter that trade unions could play a significant role in promoting OHSM. This research into the Chinese shipping industry showed a rather different picture.

Trade unions in the Chinese shipping industry are organised in a similar way to those in land-based industries. The situation in C1 will be discussed first, since in that company there was a formal trade union unit organisation on each of its ships. One of the crew was appointed as the head of the unit. Usually, crew members that had a long-term contract with their company automatically became members of the trade unions. A small percentage of a crew member's monthly salary would be deducted as trade union member fees. The interview data suggested that the major role of a trade union unit on board was the

organisation of various activities. The activities could be purely for entertainment, such as playing cards, chess or table tennis, particularly during important holidays in China, such as the Spring Festival. Or, they could be work-related contests, such as a heaving-line throwing contest among the deck crew or a machinery or pipeline dismantling contest among the engine room crew. Some crew members commented that it was good for improving their life on board and helpful for shipboard work safety. In order to support the activities on board, 1,000 – 2,000 Yuan RMB of the trade union allowance would be given by the company to each ship each year. The money could be used to buy books, magazines, or videos/DVDs to improve the crew's leisure activities, or to buy the crew's daily consumables, such as toothbrushes, shampoo, soap and towels, which would be distributed free of charge to the crew. In a sense, the union played the role of an onboard welfare agency. The allowance could also be used to buy some gifts or awards for those who won at onboard collective activities as described above.

However, this brief description of the role of the trade union unit on board does not suggest any positive role in communication with the shore management for the improvement of OHSM. For instance, it was found that the shipboard work rhythm could significantly affect the functioning of the trade union unit on board a ship. The impact of hectic schedules and long working hours on crew members and their work was discussed in section 6.2.3. The fast turnaround and heavy workload did not allow crew members to think about the role of the trade union in improving their health and safety conditions at work:

> The trade union unit didn't organise any activities this year. It's difficult to organise. The sailing schedule was too tight... calling at one berth after another. You could see the crew were belaboured. There was no energy and no time for entertainment. We work, eat and sleep. (Bosun, S2 C1)

> The trade union played an insignificant role. The whole day, we were busy with our work and nobody cared. (Motorman, S1 C1)

It was discussed above that the major role of the trade unions was the organisation of onboard entertainment activities or work-related contests; many crew members commented that there was nothing beyond that. Some said that a trade union was only a formalistic organisation, and the power of trade union unit was weak:

> In China, a trade union only has its name and has no substance. The case is similar on board. There is no resource for us to manipulate. It would be different if we had the power over human or financial resources. Thus the problem is obvious: what else can you do? (Captain, S2 C1)

The head of the trade union unit on board ships was appointed by the ship's captain rather

than elected by the crew. Usually, the post was taken by a lower ranking crew member such as a bosun (S1 C1) or chief motorman (S2 C1). Part of the reason for this was that senior officers had too much work and could not spare much time for this task. A person who was active and enthusiastic in public activities would be considered to take this position. The role of a trade union unit on board was rather limited. In such a context, its role in communication with the shore management for the improvement of the crew's health and safety conditions was equally limited:

> Regarding the trade union, it's less effective on board. It doesn't play the role that a trade union should play. The trade unions should be concerned about the crew, report the crew's collective opinions/suggestions to the shore management, negotiate with them for the crew's rights including OHS issues etc, and expect them to give solutions. But this part of the function has been lost. Unlike foreign trade unions, they stood on the opposite of the management. They had strikes. I came across similar cases in SK (a country name) quite a few times. (CO, S1 C1)

During the interviews, many crew members made attempts to compare trade unions in China with those in foreign countries, and they agreed that the trade unions in China were powerless. The role of the trade union unit in communication with the shore management was for reporting activities organised on board, as stated by the head of the trade union unit on board S2 C1:

> We have no special work to do with the shore management. It is only to submit an annual activity report. Usually, it is submitted before the end of a year. That's all. (Chief Motorman, S2 C1)

As stated in section 4.3.2, C2 was set up by a few shareholders. Although the company received some investment from a state-owned group, the operation of the company was independent. No formal trade union organisation existed on board ships in the company. However, the question was still asked about how the absence of any trade union on board could affect communication between the management on shore and the crew on board. Many crew members stated that it did not make any difference. One of the key pre-conditions underpinning the trade union activities was the allowance given by the company. In C2, the financial support was given from a captain's fund as set by the company:

> We don't have a trade union unit on this ship; therefore, we don't have any trade union allowance to buy things. But the captain's fund could be used to buy all that stuff. We could achieve the same purpose. (CE, S4 C2)

It was mentioned that trade unions mainly exist in state-owned companies in China. In C2, many crew members, particularly officers, had had experience of working in state-owned companies before. They were well aware of the trade union's role and explicitly stated that

it had little effect on the crew's health and safety at work:

> In China, a trade union is only an empty title. I worked in CSA (a state-owned company) before. If I were not happy with my work conditions, would the trade unions represent me to negotiate (with the shore management)? If they were to represent me, what could they do if the boss didn't agree? Could they announce a strike like foreigners do? Definitely, the answer is no. (Captain, S3 C2)

The data suggested the trade union's negotiating power with the management was weak, since it was affiliated to its organisation and could not work independently in the Chinese context. An experienced bosun who had worked in a state-owned company for decades described the similarity:

> The trade unions in China are under the control of an organisation's management. They are not independent and there is no way of functioning. Therefore, they play a minimal role. (Bosun, S3 C2)

In this sub-section, the role of shipboard trade union unit in negotiation with the shore management was examined. In C1, a trade union unit existed on board each of its ships while in C2, there was no trade union organisation at all. The study showed that the existence of a shipboard trade union unit did not help strengthen their negotiating power with the shore management for the purpose of improving OHSM practice. In this sense, it seemed to be of little significance whether there was a trade union unit on board a ship, for example, in the case of C2. It became clear that the real role of the trade union unit on board ships, the collective bargaining power with the shore management, as stated in section 2.5.4 in the literature chapter, did not appear in the context of these two companies in the Chinese shipping industry.

8.3.5 The Fluidity of Seafaring Occupations

It was discussed in section 7.3.5 that the fluidity of seafaring occupations could affect crews' willingness regarding safety reporting – it became one of the noticeable factors contributing to the under-reporting of safety-related problems. In a similar sense, it could further diminish a crew member's willingness to propose any constructive suggestions to the shore management. As was shown in C2, many crew members, who had short term contracts, showed a disinterest in making any suggestions:

> I worked in this company today. It's uncertain whether I will leave some day. Why should I care about it? If I had a long-term contract with this company, I would raise the point. I would arrange to improve this ship's safety, since I might return to this ship again next year. That would also be convenient for me. But for us freelance seafarers, why should we raise (suggestions)? (Bosun, S3 C2)

The impact of short-term contract employees on OHSM can be found in the studies in land-based industries in some countries. In a study of temporary employees in Norway and Australia, the lack of involvement, interest and knowledge in OHS work is identified (Saksvik and Quinlan, 2003). Some studies conducted in Australia (Quinlan and Mayhew, 2000) have suggested that precarious employment is not only associated with a low level of understanding of OHS knowledge and practice, but also a high level of resistance to compliance. In this study, although the short-term contact crew did not show obvious incompetence, the lack of motivation to participate in OHSM activities, such as making suggestions, was perceived.

In C1, although most crew members worked with longer term contracts, it did not appear to help:

> If you were on board this ship only for a few months, and you changed everything and you were going to leave ... many people would not want to do like that. Next time, I might change to another ship. I might not go to this ship again. So this affects the crew's motivation to make suggestions. (3O, S1 C1)

The data suggests that different terms in contracts played an insignificant role in influencing upward safety-related suggestions in this case. In general, the study shows that the fluidity of seafaring occupations affected crews' motivation to propose any safety-related suggestions.

From section 8.3.1 onwards in this chapter, various features affecting crew members' willingness to make safety related suggestions have been identified. The data suggested that upward communication (reporting) for crew members' safety suggestions was rather limited, and crew members' participation in the improvement of OHSM practice remained low. In parallel with this finding, it was also found that peer communication, as an alternative method of upward communication, was common. This will be examined next.

8.3.6 Peer Communication

Peer communication for crews could refer to communication among those on board a ship, or between the ships of a company. On board a ship, peer communication regarding good practice was observed during my field work. Some good practices were introduced by crew members who had previously worked for foreign ships. In general, many crew members expressed their willingness to share their good experiences with their peer colleagues rather than reporting them to their company:

> Some crew members had had the opportunity of working with foreign crews. They had learnt some good practices from those foreigners, and we could learn from them. Generally, we would not report (them) to the company. (3O, S4 C2)

It was found that, in many situations, the communication of good practices happened between superior and subordinate crew members in the same department on board a ship. For example, a description of how a good practice was imparted was noted down during my field work:

> The bosun was teaching a cadet the deck fittings there. He pointed to a short rope tied to the wheel of a valve and explained that if the rope was attached to the wheel, it indicated that the valve was closed. Otherwise, it was open. Since there are many valves on deck, this was convenient for a duty person to check their status. I asked whether it was mentioned in the written operational procedures. The bosun said, 'No'. (Field Notes, S3 C2, 22 March 2010)

On S2 C1, a chief officer narrated a case of when a lower ranking crew member had once played an important role in a ship's mooring operation. It was his unique experience which helped the ship overcome an immediate difficulty:

> Like how to tie a ship to a floating buoy … How to work on that and which tools were needed ... we (senior crew) did not have such an experience. It was a senior bosun who reported it to me. He knew how to do it more safely. It was very special and we hadn't seen or experienced it before. (CO, S2 C1)

As stated in section 4.2.1, a chemical tanker usually carries different types of toxic cargoes. The different features of cargoes and notices regarding cargo operation were of particular concern to the crew. When a new type of cargo was to be carried by a ship, some of the crew members who had had experience of it would be consulted by the others. A third officer told of a common practice on board:

> If a chemical cargo had not been carried by this ship before, the crew members who had had experience would be asked to give a speech to us. What features … how to operate safely … they would remind all of us. (3O, S4 C2)

The data suggested the existence of a 'learning community' among the crew on board a ship. Within such a shipboard community, learning from peers or mutual knowledge sharing were observed to be common, which became one of the important channels for crew members to complete their work tasks, prevent work hazards, and develop their knowledge and skills. Bhattacharya (2009) conducted an empirical study among a mixed crew on four tankers; his finding showed a strong presence of communities of practice in the onboard ship environment. The role of communities of practice in workplace OHSM in an organisation has been widely discussed in the literature. They were where practical knowledge existed and they acted as both the agent and the object of initiatives to promote

safety (Gherardi and Nicolini, 2000, pp.10 &16). Likewise, shipboard communities of practice could contribute to safeguarding seafarers' OHS (Bhattacharya, 2009, p.111). This study among Chinese crews in two Chinese chemical shipping companies showed a similar result. Communication of good practices among crew members could play an active role in improving OHSM on board ships.

Moreover, peer communication could be seen to take place beyond the ships. It could happen among crews of different ships of a company. This was particularly true in C1, where the majority of crew members were on long-term contracts and some crew members had had the opportunity to work together and to get to know each other. Thus, a crew's past experience on a ship could be shared with their predecessors of that ship. Some safety reminders would be communicated among them:

> If I had worked on that ship before, and I was familiar with that ship's captain or chief officer, I would give him a reminder when we had a conversation - 'You should be careful of this and that' - and try to prevent the occurrence of an accident. (Captain, S2 C1)

This was echoed by some other senior crew members, who said that although their experiences were their 'own asset', they were willing to impart them to their colleagues or friends on sister ships (ships sharing a similar structure) or other ships.

In general, it was found that peer communication among crews achieved a positive outcome for OHSM on board ships. Such a kind of communication helps promote a supportive organisational communication climate (Klauss and Bass, 1982; Pace and Faules, 1994; Byers, 1997).

8.4 SUMMARY

In this chapter, a crew's upward communication (reporting) for safety suggestions was examined from the perspectives of both the management and the crew. From the management's perspective, they encouraged the crew to make safety suggestions. The data suggested that the management valued the crew's contributions since the crew worked on the front line and the operationalisation of the management system relied mainly on them. In order to ensure a crew's effective work participation, various communication channels, including the captain's review report and a questionnaire-based survey or online inquiry (in C1), were in place in both companies. As a result, positive outcomes derived from those communication channels were perceived by the management. They helped to improve the

management systems as well as shipboard working practices.

However, from the crew's perspective, a number of immediate factors influencing the upward reporting of the crew's suggestions were identified. First, the data showed that it was common that the shore management did not duly respond to crew members' suggestions. Some crew members were dissatisfied with the management's non-reply attitude, and this further discouraged the crew's willingness to report. Crews saw that the management's efforts to gather their views were formalistic and they were not treated seriously. Hopkins (2000) highlighted the importance of a timely response to a reporter in a reporting system. In the case of any failure to respond, the system should have an alternative means to send the message further up the corporate hierarchy. However, there was no indication of such a practice in the two OHSMSs in this study. To some extent, this suggested the failure of the reporting system. Second, the shipboard hierarchy was another feature that affected lower ranking crew members' upward reporting. Senior officers' positional power could pose a significant barrier that affected lower ranking crew members' reporting.

Third, it was found that upward reporting may be affected by traditional Chinese culture. In this study, the cultural elements identified that could affect upward reporting were avoidance of offending seniority, relationships, conservative character, and flattery. The study suggests that the Chinese cultural elements did not encourage a crew's active participation in OHSM activities. As this study was only of Chinese seafarers, it is difficult to separate the peculiarities of the seafaring industry and general issues of power imbalance from cultural factors. Thus, the extent to which how the cultural elements could affect communication as well as OHSM practice remains uncertain. The lack of comparable studies also suggests the need for further research in order to validate this finding. Fourth, the existence of a trade union unit on board ships did not add weight to a crew's negotiating power with the shore management. It equally suggests a crew's limited participation in the improvement of OHSM in the Chinese shipping industry. Fifth, the research further revealed that the fluidity of seafaring professions could affect a crew's willingness to participate in the upward reporting of safety suggestions. Crews' frequent change of ships limited their 'good will' in improving OHSM on board a ship. As a result, there was less upward communication for reporting OHSM-related suggestions. In parallel, the research found that, as an alternative way of upward communication, crews tended to have more

communication about their good safe practices among their fellow colleagues. The communication among crews themselves suggests the existence of a ‘learning community’ among crews. Crews’ peer communication, identified from the data, could help the improvement of shipboard OHSM. Given the positive role of peer communication, it was subject to certain conditions among which the crew’s relationship was highlighted. Together with limited upward reporting, the experience of good practice on one ship was difficult to share with crew on other ships of the company.

In general, it was found that a significant gap existed between the management’s expectations and crews’ practice in terms of reporting safety suggestions for the improvement of OHSM on board ships. Similar to the situation of safety reporting discussed in Chapter 7, the upward communication for reporting safety suggestions remained weak. The research showed that such communication (reporting safety suggestions) helped little in improving OHSM on board ships. The identified reasons in this chapter are a contributory factor to the limited upward communication and suggest weak crew participation in OHSM, which will be further discussed in Chapter 9.

CHAPTER 9 COMMUNICATION: ITS CONTEXTS AND INFLUENCES ON CREW'S OHSM PRACTICE

9.1 INTRODUCTION

Using evidence reported in the previous four chapters, this chapter explores the organisational and social relations' contexts in which communication between shore based management and the crews of ships takes place. It is concerned with the influence of such contexts on the role of communication in determining the nature of health and OHSM procedures, practices and outcomes. It identifies a number of features of the social and organisational contexts of life and work on board ships and examines how they mediate communication processes in relation to occupational health, safety and well-being. In this way it discusses the research questions the research has set out to address – what are the factors that underlie the nature of workplace and organisational communication, how crew's work practice in relation to OHSM can be influenced by them, and to what extent crew's health, safety and well-being can be affected as a consequence of the shore-ship communication.

In this thesis, I set out to investigate the role of communication on influencing shipboard OHSM. Clearly to an extent, the nature and types of communication I have investigated do influence shipboard OHSM practice. However, I have discovered that the significant influence on the role of communication in determining health and safety is not found in different types of communication themselves, but rather in the socio-economic and cultural factors that mediate such communication. My fieldwork evidence suggests that among these, the greatest influential factor is the underlying profit motives that drive companies. This affects not only the content and priorities of communication from shore management to ship's crew but also the security of their employment. It is these effects that combinations determine the OHSM practice observed on board. In this chapter, I will begin with the discussion of my evidence for reaching this conclusion, before moving on to consider other subsidiary influences including national cultural context of Chinese vessels and the role of external monitoring of compliance. Following this analysis I discuss my evidence concerning specific cases of these influences in relation to shipboard practices and contrast the shore support for safe work practices on the one hand with that for achieving management control on the other. And also in this respect I offer some reflections on the way that the constraints inherent in the nature of social relations between the management

and crews of the ships I studied, as well as in the insecurity of the latter's employment situation, undermined the quality of feedback necessary for the continuous improvement that advocates of OHSMSs argue to be a function of feedback. Finally I discuss the suggestion evident in my data that in fact communication overall may actually serve to worsen crew's health and safety situation, rather than improve it, as in the stated intent of its role in OHSMSs.

9.2 CONTEXTS OF COMMUNICATION – FACTORS UNDERLYING THE NATURE OF WORKPLACE AND ORGANISATIONAL COMMUNICATION

The findings in chapters 5-8 reflect how communication between shore and ship (and also on board ship) was affected by a number of organisational features of work at sea. They included the experiences hierarchy, power and discipline within the shipping companies studied; as well as the ways in which the management of shipping companies pursued efficiency and profit in their operations and how they positioned concerns about safety in this respect. I further noticed how the participation of crew in the management of health and safety was circumscribed by these organisational contexts and how this specific Chinese cultural context also affected the operation of approaches to these matters. In this section I explore these features of life and work on board ships, situating my analysis within the wider literature on the role of these issues in workplaces and within organisations more generally. I thereby demonstrate how each of these features operated to affect ways in which communication was used in relation to the OHSM and its outcomes on board ships.

9.2.1 Hierarchy, Power and Discipline in Management

The field data showed that organisational hierarchy, power and discipline could affect communication between shore management and ship's crew. In this section I explore the influences of each of these in further detail, situating the discussion with reference to the wider literature.

a) Hierarchy — In general, the contrasting views between crew and shore based managers presented in the previous four data chapters reflected the significant influence of hierarchical factors on their communication.

In section 2.5.2, it was mentioned that management control was achieved by

communication across the hierarchy in an organisation (Walton, 2003). Hierarchical structures are central to many contemporary organisations (Harley, 1999; Magee and Galinsky, 2008). Within such a hierarchical system, people are expected to accept their positions and fulfil their roles within it rather than challenge the order (Shi and Westwood, 2000, p.197). The essence of a hierarchical system is to establish order, exercise control and achieve efficiency in the application of the work force (Walton, 2003, p.116). The influence of hierarchy in organisational communication can also be seen from the literature. For example a study in aviation industry also showed that hierarchy was a serious problem that affected communication between flight pilot and attendants (Eisenberg *et al.*, 2005). Byers (1997) found the situation did exist that managers at higher positions complained their little knowledge about the situations several levels below them. Similarly, the study showed that the gap of understanding existed between those at different hierarchical levels. A similar situation prevailed on board ship with the consequence that the management-crew communication did not meaningfully facilitate management's understanding of shipboard OHSM conditions. For example, although the management showed their eagerness to know crew's thoughts and working conditions, particularly during a ship visit (as seen in section 6.3.1), the findings presented in Chapter 7 indicated that management's knowledge about shipboard OHSM was very limited.

Most significantly, as stated in Chapter 7 and 8, the hierarchical structure could affect crew's upward communication especially in relation to safety reporting and suggestions for improvements. This is also a finding that is aired in previous literature. For example, Leonard *et al.* (2004, p.186) noted that hierarchy, or power distance, could inhibit employees from speaking up. In my study, during interviews with crew, some terms such as 'hierarchical difference', 'the gap of social statuses' and 'lack of common background' were referred to by them (see section 6.3.2). Rogers and Agarwala-Rogers (1976, p.85) pointed out the problems of organisational communication alike were caused by 'bureaucratic hierarchy'. It suggests the hindrance of hierarchical gap in upward ship to shore communication.

In a similar sense, I reported how shipboard hierarchy could affect ship to shore communication, as illustrated in section 8.3.2. Typically, some of the important events occurred or views shaped at the lower levels of shipboard hierarchy could not pass through the hierarchical structure to reach shore management.

A further point of relevance here is that several observers such as Chapman (1992) and Kitada (2010) have likened the nature of shipboard working environment to that of a 'total institution', as that defined by Goffman (1961). Goffman (ibid) argued that an individual could be subordinated to the authority of the institution within which he/she resides. To some extent, a ship is a kind of *institution*. The interviews with crew showed that many of them cared much about their immediate leaders – crew's at senior positions rather than shore management. Thus, they would not attempt to do things that they believed to be against the wishes or interests of these superiors. In this way shipboard hierarchical structure could also influence ship to shore communication such as by preventing the reporting of certain incidents or activities, for example the non-conformity reporting illustrated in section 7.3.2.

In brief, this study showed strong presence of hierarchical factor in shore-ship vertical communication process (many further examples can be seen in Chapter 6, 7 and 8).

b) *Power* — Within an organisational structure, different levels of formal authority are distributed to various positions in the hierarchy. In practice, the influence of hierarchy is externalised by the *organisational power* attached to each of the positions within it (Harley, 1999). In a similar sense, the study showed that the communications between management and crew are considerably influenced by the power relations between them.

Magee and Galinsky (2008) and Antonsen (2009, p.49) interpreted power as control of activities, resources and employee performance. In section 2.5.2, it was pointed out that the division of labour in an organisation leads to power differences between management and employees (Pfeffer, 1992). In a shipping company, the shore management, situated at a higher hierarchical level, was therefore entitled to exert controlling power over the supply of material, shipboard OHSM practice and crew's employment. In Chapter 5, the examination of shore-ship communication showed that the supply of material resources as an essential precondition for OHSM was eventually decided by shore management. In Chapter 6, I reported how the communication for management control was achieved by instructions or orders given via technology-based communication as well as through ship visits. Typically, the former was characterised by the control of ship's sailing schedules, while the latter was dominated by shipboard safety inspection. They all suggested the

prominence of managerial power in play during such communication activities.

Moreover, the study showed that shore to ship communication could be affected by the managerial power over crew's work arrangements. It was stated in section 4.3 that, in both companies, the managers from crewing, marine affairs and marine engineering departments had equal decisive power on appraisal of crew's performance as well as appointment of individual crew, particularly those of senior crew. In this context, being evaluated by them as a good performer was very important for individual crew, since it closely linked to crew's job security. Thus, for the crew, maintaining a high level of consistency in their declared willingness to follow managerial dictates in communication with shore management was important. Otherwise, they believed the impact on their appraisal would be negative. A typical example was that delays of sailing schedules were usually seen as a violation of shore management's order. The case was similar to the situation described in Perrow's work (1999) that management could shape a wrong impression that a captain wanted to maximise crew's comfort at the expense of company's interest. As a consequence, the captain's performance appraisal would be affected negatively. In my study, although the shore interview data showed the management to believe it exerted a 'moderate and reasonable' controlling power over crew and ship's OHSM activities, the interviews with crew on four ships indicated they shared a very different perception, in which they feared greater control (see Chapter 6 and section 9.3.2 for details). In general, this perception of the presence of management's controlling power over ships and crew did not help to facilitate an open and negotiable communication atmosphere that was conducive to the improvement of workplace OHSM.

c) Discipline — The research further revealed that the management's controlling power was underpinned by disciplinary actions.

The role of disciplinary actions has been discussed in section 2.5.2, and the result was generally positive in OHSM (Eakin *et al.*, 2000; Wokutch and VanSandt, 2000; and Robson *et al.*, 2007). As showed in section 6.3.1, 7.3.2 and 7.3.4, the reward and punishment scheme, applied for the appraisal of crew's performance, was often mentioned by the shore management as well as crew in both companies. Hutter (2001, p.296) points out that some form of discipline is necessary when dealing with employee's non-compliance actions and it is commonly found in modern organisations (Goulielmos and Goulielmos, 2005). An

effect of the potential threat of such disciplinary action and the application of the reward and punishment scheme was to undermine the crew's willingness to reveal OHS problems during ship visits by shore side management. For fear of the blame and punishment (typically during a ship visit by the shore management), some of the problems that had significant safety implications were hidden from shore management. Similar examples can be found in the literature. In the DuPont and Toyota model of OHSMSs, for instance, various economic incentives and violation consequences were built in with the aim to induce workers to compliance with rules and procedures, with the effect of 'pitting worker against worker, undermining union solidarity, blaming the victim for problems that do occur, and inducing workers to hide injuries and illnesses when they take place'(Wokutch and VanSandt, 2000, p.376). Lindberg *et al.* (2010, p.717) found that incidents/accidents were much less likely to be reported if reporting led to disciplinary action. This empirical study on board the vessels showed a similar situation. The reward and punishment scheme as a major management tool tended to be more likely used for punishing crew rather than rewarding them. As seen in section 6.3.2 and Chapter 7, the crew's concerns in communication such as the fears for causing negative impact on themselves, offending shore management and harming crew's solidarity suggested that such a scheme made a very limited contribution to better shipboard OHSM.

The consequences of this concern with their vulnerability on the part of the crew are worth some elaboration. For while it was clear that it was a requirement that they report shipboard safety related problems to their company, the study showed that under-reporting was prevalent in practice. These specific underlying factors of hierarchy, control and unequal power distribution all affected the crew's upward safety communication (reporting) and were therefore important limiting factors on the operation of OHSMSs that rely on feedback and review for their effectiveness. There are similar findings reported in the wider literature (Bellaby, 1999; Dorman, 2000). But they also did so through perceptions held by the crew concerning conflicts of interest over specific issues such as pay and promotion.

For example, a reward and punishment scheme was applied in both companies and safety bonuses were used to reward crew when a safety objective was met. Although in practice these bonuses contributed little to crew's overall income, the crew nevertheless worried that their salary would be deducted by the shore management if a safety related problem was reported to the company. Evidence of this is found in section 6.3.2, 7.3.2 and 7.3.3

respectively. As a result, they refrained from reporting some of the problems on board.

Furthermore, the study revealed that crew worried that safety reporting could affect their job promotion. In general, if it was proved that a problem was caused by someone, the affect on his promotion was inevitable. It could be seen from the data presented in section 6.3.2. Equally, the data suggested that reporting near misses could have potential affect on one's promotion. The detail was given in section 7.3.4. It was particularly the case in C1 where most of the crew had long-term contracts with their company, and crew's job promotion was mainly arranged by shore management. Thus, crew's concern of their job promotion therefore could discourage their reporting.

The data presented in section 6.3.2 and section 7.3.4 also showed that crew feared they would be assigned worse jobs (in the case of C1) and experience job insecurity (in the case of C2) if a reported problem was identified to associate with their responsibilities. For the former, a 'bad' performer could be moved to a ship with poorer ship conditions or dispatched (exiled) to a ship of another company, which was seen as a kind of discrimination by many crew. For the latter, crew could be at risk that their contract be terminated unconditionally by the shore management. Thus, it could be seen that crew's concern for their job security could also affect crew's safety reporting.

Last but not least, the perception that safety reporting could affect one's reputation was also prevalent. In the OHSM systems of the two companies, guarantees were given that any reporting, particularly near miss reporting, should not affect the person(s) involved. A reporter should even be rewarded. However, the crew did not trust the effectiveness of anonymity in reporting systems. A common view was that shore management as well as their fellow colleagues would know person(s) involved by 'accurate guess'. In section 2.7.2, the importance of face work for Chinese people was explained. The result of 'accurate guess' could mean shame for the person(s) involved. Thus, crew's concern for their personal reputation affected their willingness to reporting.

These findings resonate with others described in the literature. For example, Hopkins (2000) noted that if reporting an incident could have negative impact on a reporter, the reporting would be muted. In a similar sense, this study showed that crew's safety reporting (ship to shore communication) was significantly affected by the concerns of their salary, personal

reputation, job promotion and security. They all pointed to crew's self-interests, one of the major factors affecting ship to shore safety communication (reporting). Moreover, the study showed that crew's economic interest lay in the centre of their self-interests, since it was essential to support and survive their family. During the interviews with crew, some frankly pointed out the core issue that needed to be cared by the shore management:

> What might work for the crew are: one is salary; second is promotion; then (crew's) family concern – since there is a family behind each of the crew. Crew's salary is the core supporting their family (CO, S3 C2).

Leung (2003) argued that one's income was more crucial in developing countries with unsound welfare systems such as in China. It was the same for crew working in the Chinese shipping industry given the fact that their average income was comparatively higher than those working in some other industries. Therefore, crew's concern for their income was understandable.

As a breadwinner of a family, an employee's economic condition may override their concern for OHS in the view that maintaining family income is crucial for survival (Levenstein and Tuminaro, 1997). Under such circumstances, an employee's expectation about his/her own OHS could be low, and workplace hazards may be accepted 'fatalistically' (ibid, p.6). For some crew the relatively higher salaries received by those working in chemical shipping sector, were believed to be associated with the relatively higher risk of their work. Some addressed themselves as 'drug takers' – drug means chemicals in this context. Therefore, it could be seen that the crew were themselves concerned more with their income than their OHS. In this situation an employee might intentionally 'neglect' workplace hazards in a scenario in which there was no reasonable likelihood of change of work environment or employment alternatives (ibid). Eventually, workplace risks were 'naturally' accepted by an employee as part of his/her job (Dwyer, 1991). Here, there are echoes of Nichols and Armstrong's analysis (1973) and the study among Chinese crew working in the Chinese chemical shipping industry showed a similar situation. In consideration of relatively higher salary, they were willing to work on chemical ships facing potentially higher risks than others. For ensuring that their salary was not deducted, many crew would rather remain some safety related problems unreported, particularly those likely to be deemed by shore management as human errors (crew's mistakes or faults).

To sum up, the study showed that shore-ship communication (particularly the downward

communication) was significantly affected by organisational hierarchy, positional power at different levels and systems of discipline (in this study the reward and punishment scheme). These also affected the attitude of the crew towards concerns about job security, pay and promotion prospects, all of which militated against open and co-operative engagement with health and safety management systems. The investigation further showed they all had a potential link to shore management's economic concern, which will be explored next.

9.2.2 Efficiency, Profit and Safety

The examination of shore-ship communication also revealed that it was interwoven with the concerns of profit making as well as safety. The relationship between efficiency, profit and safety has been mentioned before in the literature. It is widely argued that good safety practice goes hand in hand with better productivity and profitability (Nichols and Tucker, 2000). Indeed the UK health and safety regulator has made a considerable effort to emphasise that an organisation which successfully managed OHS will recognise the relationship between risk control, occupational health and the core of its business (HSE, 1997, p.7). Most of the literature on the concept of 'safety pays' asserted that accidents and ill health are costly for individual employees, employers, insurers or the general public at large (Panopoulos and Booth, 2007). As I have already discussed in section 2.5.2, there is however another school of thought evident in the sociological literature in which the relationship between safety and profit is regarded as somewhat more problematic. Classically expressed by Nichols and Armstrong (1973) in their study on chemical workers, they argued that workplace safety should be addressed in their total situation and in the context of the social relations of production. They identified that most safety problems occurred due to the pressure workers were under to keep production going, and the conflict between safety and profit is fundamental. I will argue in this and next chapter that the divergent opinions held by shore management and ship's crew that have been presented in the data chapters are better understood in the light of Nichols and Armstrong's reasoning, than they are in terms of understandings in which safety and profits are regarded as complementary components of the same overall organisational goals.

In Chapter 5, it was demonstrated that communication for the purpose of shore support showed that although there were some positive achievements for OHSM practice in terms of technical and informational support, the lack of material resource support limited the operation of various arrangements and activities of OHSM. Typically, the insufficient

supply of working tools and consumable materials brought about potential threats to crew's OHS.

In essence, the control of the supply of material resources was the control of cost. During my field work onboard ships, the term *cost control* was mentioned many times by the crew (see section 5.3.3). Some shore management interviewees also expressed a similar concern:

> If some items do not affect much on safety, cost issue would be considered. After all, we work for the boss, and we should try to earn money for the boss (Marine Engineering Manager, C2).

These sentiments echo those presented by Nichols and Armstrong (1973) in their account of the ways in which workers in a chemicals factory in the UK 'normalised' their approach to breaking safety rules in order to maintain the factory activities in ways profitable to their employer. According to them, safety at work often 'boils down to a question of economics' (ibid, p.29). As they quote from a worker in their study:

> Managers might be interested in safety. Nobody likes to see a bloke get into an accident. But I think if they get their production going and things like that and the job going all right, that's their interest (ibid, p.28).

In a similar vein, my study showed that the company's asserted priority of 'safety first' was actually compromised by the shore management's prioritisations of concern over profit.

Therefore, it is not difficult to understand that managers may find the requirement of OHSM so costly that it led to a low level of compliance (Frick and Zwetsloot, 2007). Similar cases have been seen in previous studies in the shipping industry. Such reasoning was something that was an everyday occurrence on board the ships on which I sailed. For example, a captain could save cost for his ship owner if he did not use pilotage (or tug assistance) in cases when they were optional. And such experiences are also reported in previous studies of safety at sea:

> Sometimes a shore person will suggest we sail with no tugs or sail in limited visibility. This reduces his port operating expenses…If we come into an anchorage in fog, his budget gets an expense of a launch and reliefs (Perrow, 1999, p.183).

It could be seen that the 'perceived cost' of safety management activities emerged in the decisions making at all levels in an organisation (Cox and Cox, 1996, p.209). While the concern of cost saving was observed in my study, the concern of profit earning was equally observed. As illustrated in section 6.2.3, the hectic sailing schedules, seen on the four tankers on which I sailed, were resonant with early research findings in this industry that

more profit came from the 'speed and efficiency' of work and 'the money is to be made by keeping it working' (Perrow, 1999, p.181).

As is known to all, weather conditions could have significant impact on ship's sailing schedules. Principally, the intensity of (bad) weather conditions should be observed and judged by a ship's captain in making decisions about whether to sail from ports or in planning the route of the voyage to be taken. In this study, the communication between shore and ship showed that in the two companies, the shore side seriously intervened in the captain's supposed independent decision-making power over ship's sailing. The consequence was that, for fear of causing voyage delay, the potential threat from external adverse environments was *intentionally neglected* by the ship's crew. Thus, it could be seen that the management's consideration for profit seeking contributed to crew's risk taking behaviour. In addition, as illustrated in section 6.2.2, 6.2.3 and 9.3.2, the shore to ship communication for management control showed that ship's schedules (both sailing at sea and calling in a port) were closely monitored by the shore management in both companies, which became a heavy psychological as well as physical burden on the crew, particularly the senior officers such as a ship's captain. I will have cause to return to the consequences of this later in this chapter. As a result, shipboard OHSM was compromised by strong commercial pressures (also see Perrow, 1999).

In general, the management's concern for cost control and profit seeking, to a considerable extent, showed that short-term financial consideration dominated their ideology in their routine OHSM. During the interviews with some managers, they frankly said that their companies could not survive without these considerations. For example, a manager, one of those who could go in-depth regarding this topic, spoke 'the unspoken words in the play':

> For ship owners, mostly, the first thing they think is the economic concern. As a result, the (prevention) of the threat to crew lives could be tampered. I think it exists in their sub-consciousness, even for a responsible ship owner. But no one would say so on the table (Safety and Quality Manager, C2).

The quote reinforced the existence of the hidden agenda, the economic concern, behind the way in which a ship was managed by the shore management. It has also been recognised previously, for example in Perrow's work (1999). This contradiction between safety and production was commonly seen from the data, and which was a concern for some crew:

> In our company, the relationship between safety and efficiency is not properly dealt with. They are always contradictory. If you cannot guarantee safety, how can you ensure efficiency (2E, S1 C1)?

These contradictions, between safety and efficiency, classically demonstrated by Nichols and Armstrong in their seminal sociological work (1973), can also be seen in many other sociological treatments in the literature. Authors such as Levenstein and Tuminaro (1997), Gunningham and Johnstone (1999), and Dywer (2000) argued that employees' working conditions became worse when an employer bore the pressure of strong market competition and sought for short-term profitability. The study made by Levenstein and Tuminaro (1997) showed that when an organisation faced strong market competition, the competitive pressure was frequently passed along to employees and workplace OHSM practice was considerably undermined. Because of pressures of production, there are many cases where injuries go unreported, supervisors 'turn a blind eye' and unsafe practices continue owing to the drive for making profits at the expense of safety (Quinlan, 1999). The findings in my study showed a similar situation in the Chinese chemical shipping industry. As a consequence, the outcome of OHSM can be significantly undermined, which I will argue later in this chapter.

The management's strong economic concern further affects a company's ongoing investment in OHSM. Gunningham (2007) distinguished four different types of organisations, i.e., the OHS Leaders, Reluctant Compliers, the Recalcitrants and the Incompetent one, among which the type of OHS Leaders was highly commended by him. Previous research in the shipping industry has showed that the above mentioned scenarios all applied (Anderson, 2003; Bhattacharya, 2009). It was further strengthened by this study in the Chinese chemical shipping industry. My examination of shore-ship communication revealed that the shore management tended to prioritise efficient production (in the shipping context it means fast sailing) rather than safe production and demonstrated that management in both companies had stronger 'economic' commitment than that held for better shipboard OHSM.

9.2.3 Crew's Participation in OHSM

In section 6.2, the examination of shore to ship communication showed that crew's autonomy and decision making power were assured from the shore management's perspective in both companies. Also, they were clearly stated in their OHSMSs. However, the crew's responses showed that crew's autonomy and independent decision making were apparently compromised during shore-ship communication (interaction). Influential factors included those such as hierarchical differentiation, the management's controlling power, the

discipline and rule restriction played a role in this. In ship interview and observational data, most of the crew, particularly the senior officers, indicated that they felt highly controlled by shore management and they had little autonomy in terms of the ship's routine operations.

Dywer (1991) described two types of situations in which workers autonomy was significantly hindered. One was the 'authoritarianism' under the impact of which worker's autonomy was limited and they could be threatened or punished by the management. Another was the 'voluntary servitude', in which workers were obedient to management's command even if there were apparent difficulties in completing work tasks. Under such circumstances, a seemingly harmonious relationship was created between the two, as a result of which adverse working environments were considered as 'normal'. In this sense, the 'normal safety rules' become redefined as 'abnormal controls' (ibid, p.116). My study showed similar situation. Many crew complained that shore management were not concerned with ship's real conditions when health and safety related decisions were made. They used phrases such as 'no other way around' or 'no other choices' to conclude their talk, which suggested very limited autonomy at their hands in terms of shipboard OHSM.

In Chapter 7, it was made clear that although the shore management expected as well as encouraged crew to report safety related problems occurred onboard ships as often as possible, the examination of ship to shore upward communication showed that safety related events (including nonconformity reporting, accident reporting and hazardous situation reporting) were significantly under-reported as well as reported in a biased way. As I have already discussed, the possibility of disciplinary action hampered, rather than facilitated, crew's participation in OHSM. Although Cooke and Rohleder (2006, p.218) pointed out that one important way of showing management's commitment was to reward, rather than punish, incident reporting, this study did not show any significance of such a practice. Simply, it seemed illogical to reward a 'mistake', as stated by many crew.

In a similar sense, the shore management in both companies equally expected crew to make constructive safety-related suggestions that could help the improvement of their OHSM. As illustrated in section 8.2, open-door policy, attitudes surveys and similar devices were used by both companies in order to learn about crew's OHS concerns. The results showed that those efforts for strengthening shore-ship communication achieved very limited outcome.

In general, it was found that the bureaucratic management practice, the hierarchical differences and the traditional Chinese cultural elements significantly affected the willingness of crew to give their suggestions to the management for shaping good OHSM practice in the companies. For example, a chief officer stated that it was not respectful to the shore management if crew give them safety-related advice, since they are supposed to know better than crew (see section 8.3.3).

In section 2.7.3, the development of Chinese seafaring labour market was described. Because of the frequent change of ships in a company or between companies, crew tended to be reluctant to give any constructive ideas for the improvement of shipboard OHSM practice. Many of them thought that it did not make significant sense to them since they work from ship to ship and the condition of each ship is different (see section 8.3.5). In general, the study showed that the fluidity of the seafaring occupation did not promote crew's participation in OHSM.

The crew's collective participation through for example, the involvement of shipboard trade unions' units did not lead to improvement in ship to shore communication. In section 2.5.4, the positive role of trade unions in improving workplace OHSM has been examined. Mostly, the evidence for this comes from developed western societies. The discussion in section 8.3.4 suggested that the role of trade unions in the Chinese shipping industry was limited. It failed to contribute to the improvement of communication between shore management and ship's crew, largely because the crew's collective bargaining power remained weak.

In general, the crew on the four ships showed very limited upward communication no matter whether it was conducted in individual or collective form which further indicated their limited participation in organisational OHSM. This finding is similar to that of Bhattacharya's research (2009 and 2012) in the international shipping industry, which also showed low crew's participation in OHSM. Yet it is widely discussed and agreed that (see section 2.6.2) that worker participation is an essential pre-condition for improving workplace OHSM. The limited autonomy and participation of the crew revealed in this study suggests this is a challenge that remains to be addressed.

9.2.4 Other Influences

Apart from the above-mentioned dominant factors that influenced shore-ship

communication, the data chapters reveal two other noticeable factors that mediate shore-ship communication. One was the influence of the Chinese culture; the other was the influence of industrial bodies in the chemical shipping industry. They are discussed in the following.

The Chinese Cultural Context

The research literature shows that Chinese traditional culture persisted in modern organisations (see section 2.7.2). In this culture communication was highly contextual (Hall and Hall, 1987; Shi and Westwood, 2000, p.212). The present study showed that communication between management and crew is likely to have been influenced by traditional Chinese culture.

From management's perspective, the traditional Chinese culture helped enhance their decision making power in the process of shore to ship communication in a well-established hierarchical structure in an organisation. As stated in section 2.7.2, there is a large power distance across different hierarchical positions, and the power is unevenly distributed but socially legitimised in the Chinese society (Hofstede, 1991). Chinese people are expected to accept their positions, dutifully fulfil their roles and not challenge the order (Shi and Westwood, 2000). This paradigm extends into all hierarchical systems including organisational superior-subordinate ones and the present study showed that managerial power, was reinforced in the process of downward communication for the execution of various working instructions or orders by the Chinese cultural context in which it occurred.

Nor did traditional culture help facilitate upward (ship to shore) communication on OHSM related issues. More specifically, the communication was affected by some traditional cultural elements such as 'respect for seniority', 'respect for hierarchy', 'avoidance of offending management', 'affecting crew solidarity', 'conservative character' and 'dislike of showing-off'. They were identified and discussed in section 2.7.2, 6.2.2, 6.2.3, 6.3.2, 7.3.2 and 8.3.3 respectively. These cultural elements considerably affected crew's upward communication (reporting), and as a result some of the good practices were under-reported or not reported at all. For example, if the lower ranked crew did not establish a good relationship with senior crew, it was very likely that a good idea would not be reported upward. It is unlikely for ratings to report to the shore management without mediation from the senior crew. Hence, the shore management's understanding of shipboard OHSM

practice was limited.

As is clear from the literature the cultural differences affect the way in which worker's communication and participation in OHSM related issues are conducted (Needleman, 2000). Chinese traditional culture helps to promote downward communication while hinders upward communication within a hierarchical structure of an organisation. It is an implicit moral order rather than codified in law or institutionalised in structures of civil society (Shi and Westwood, 2000, p.197).

The Role of Monitoring Compliance

The research made by Walters (2005) showed that the supply chain, the intermediary processes and actors in wider economic and social environment were identified to be able to play a significant role in influencing OHSM of an organisation. As explained in section 4.2.3, it is common that the OHS conditions of a chemical tanker shall be inspected by external monitoring bodies such as FSC, PSC, CDI and oil majors. In this study, it was found that they could also influence communication between management and crew.

Of all the external monitoring bodies that could significantly affect shipboard OHSM, the role of oil majors such as BP, Shell or ExxonMobil, was especially powerful. Both shore and ship interviewees agreed that if a ship could pass oil majors' inspection, it would be easy to pass other inspections. Most significantly, passing oil majors' inspection could have special implications for a company's commercial interest. If a ship failed to pass oil majors' inspection, the ship was not allowed to carry cargoes from them. In addition, the inspection result could seriously affect a company's 'international reputation', since it would be uploaded to the internet that was open for access by various charterers or cargo owners from home and abroad. In this context, a good inspection result was an important factor attracting 'high-end customers' that could be potentially helpful for a shipping company to gain higher 'economic return', as repeatedly mentioned by many interviewees. This further stimulated shipping companies to apply for oil majors' inspection in spite of their strict inspection standards.

The implication of external inspection for the business of a chemical shipping company has been made clear. In common, a company's internal inspection served for passing external inspection. In order to ensure passing the external inspection, an internal inspection may be

even stricter than an external one (see the last quote in section 6.3.1).

The influence of external inspection on shore-ship communication could easily been seen from the data. The study showed that both shore management and ship's crew showed particular concern for passing various external inspections. During the short period before an external inspection, the communication between the management and crew was more frequent and burdensome. This added significant workload and work pressure on crew, as seen in section 6.3.2. In particular, the research found that an external inspection could significantly affect ship-shore written communication. Since various written records related to shipboard OHSM were one of the major areas of an external inspection, crew therefore worried about reporting safety problems (to their company) in written forms:

> Some are about company's internal information. They cannot be spoken out. For example, some equipment's working conditions are not stable. We hesitate whether they would be written down on paper and get them reported (to the company). If we do so, the records would be easily identified by an external inspector (Captain, S4 C2).

A second engineer further explained:

> The written reports…it is no good for external inspection. If an inspector found that you had more problems reported, they would doubt your ship's management and check in more detail (2E, S2 C1).

Thus, the data shows that shore-ship communication (more exactly, upward written communication) was affected by external inspection bodies, particularly the oil majors.

A further indirect effect also noted was that these efforts noticeably added to crew's administrative paperwork burdens. This situation was seen in studies in the international shipping industry (Anderson *et al.*, 2003; Bailey 2006; Bhattacharya, 2009). The paperwork based audit practice was criticised by them in it is so focused on 'correctness' that it misses the point about the improvement of workplace safety. As a consequence, it indirectly brought about negative effects on crew by increasing their workload without giving any benefits.

In brief, the study suggests that shore-ship communication can be noticeably influenced by the practice of monitoring compliance. On the one hand, it showed that the communication was increased before the arrangement of an external inspection; on the other the consequence of this is that it served to increase the administrative burdens for the crew, their workload and their stress, which will be particularly addressed in section 9.4 in this

chapter.

9.3 COMMUNICATION AND ITS INFLUENCE ON OHSM PRACTICE

In section 9.2, a range of factors underlying the nature of workplace and organisational communication in the shipping context that could solely or jointly affect communication between management and crew were discussed. This section continues the exploration of how communication influences shipboard OHSM practice in the two selected companies.

9.3.1 The Effectiveness of Shore Support

Chapter 5 discussed communication for the purpose of shore support. The data suggested that communication played a very limited role in improving shipboard OHSM. Three major types of support were identified from the data, i.e., technical support, information support and material resource support.

The study of communication for technical support, particularly during ship visits, shows that it can play a positive role in improving crew's safety knowledge and skills conducive to improving shipboard OHSM. It could be used to convey safety education from both management and crew's perspectives. Given the fact that some senior or experienced crew did not fully agree with such a conclusion in view of their competence, its positive role should not be neglected. As for safety information communication, the study showed that it played a fairly positive role in improving shipboard OHSM. It helped crew learn lessons from the past, reinforced safe-working practices, and refreshed their safety knowledge. Similarly, its positive role in influencing OHSM was generally confirmed by both shore management and ship's crew. However, the study showed that the crew regarded the provision of material resources for shipboard OHSM as insufficient. Examples such as the short supply of UTI used for the measurement of cargo and paint can be seen in section 5.3.3 and therefore, although communication for technical and informational support showed certain positive outcomes, its effectiveness was bottlenecked by a failure to provide essential material resources as a pre-condition for OHSM, with the result that in general, shipboard OHSM was not fundamentally improved through such communication.

9.3.2 The Effectiveness of Management Control

In Chapter 6, communication for management control was examined. This communication is essential for ensuring OHSM onboard ships. This study shows that communication

between management and crew has made a very limited contribution to the improvement of Chinese OHSM practice.

In section 2.5.2, the role of management control for ensuring workplace OHSM is discussed by authors such as Quinlan and Mayhew (2000), Dorman (2000) and Skoog (2007). In the shipping industry management control is achieved by technology-based communication and ship visit communication (see Chapter 6). The examination of technology-based communication shows that the use of telephones is more frequent than other means of communication. However, it only serves for the purpose of reinforcing shore management's close supervision of ship's sailing given the fact that its communication cost is comparatively higher than the written ones such as email. Telephone communication leaves no evidence that might accuse any shore management's shortcomings or blameworthiness during shore-ship communication. One consequence of this is that crew bear the psychological and physical pressures, as shown in section 9.4. This is unfavourable for improving shipboard OHSM.

Furthermore, it was seen in section 6.3 that the ship visit communication was characterised by spot inspection (a common way of safety control). Its role in OHSM could be seen in the literature. Although it might help improve tangible OHS arrangements, it could not address 'the root causes' of invisible problems such as work pressure (Probst and Brubaker, 2001). Bruhn (2006) held a critical view that inspection is much more difficult to observe work organisation and psychosocial risks unless they were told by workers. The research findings in Canada (Bornstein and Hart, 2010) doubted the effectiveness of the conventional 'tick the boxes' auditing approach commonly applied in practice. This method is unable to 'assess how these actually operate in practice or ask whether the OHSMS itself is adequate in its design and assumptions' (ibid, p.61). In this study, ship visit communications dominated by safety inspections, show that the situation was similar to that stated in the literature. It did not meaningfully help crew solve critical safety problems on board. Hence, there was a lack of evidence to show that it could improve OHSM on board.

Chapter 7 and Chapter 8 discuss crew's safety reporting and suggestions which were regularly reported to shore management. They dominated ship to shore communication in this study. Regardless of the significant problems of under-reporting and biased reporting, the reported events would be audited by the shore management. This communication

served as key evidence showing shore management the status of shipboard OHSM. It (the audit of ship's reports) was a routine practice for controlling shipboard OHSM activities when a ship visit was not available. However, this paper trail based audit approach has been argued to be over-bureaucratic (Bhattacharya, 2009). The emphasis on paper logs is reminiscent of 'managerialist audit culture' that was similar to a case study conducted by Sum and Ngai (2005) in China. In general, Kipnis (2008, p.281) noted that paper, logs based audits all attempted to adopt statistical performance measures, but it can potentially distort the phenomena that were measured. In my study, it showed that the shore management's audits of crew's safety reports were mainly used to make deductions from crew's safety bonuses. Also, the shore management's response to crew's safety suggestions was basically bureaucratic, for example, the non-reply practice shown in section 8.3.1. Therefore, the shore to ship communication as well as follow-up communication made very limited contribution to the improvement of OHSM on board.

In section 2.5.2, the role of the management control in influencing OHSM was highlighted, and its focus on worker behaviour was criticised by many authors such as Frick and Wren (2000), Nichols and Tucker (2000) and Shaw and Blewett (2000), who advocated the use of a situational approach to safety, i.e., safety place or environment. The findings of my study reflected the adoption of former approach to workplace safety by the management – the management tended to stress crew's safe behaviour rather than safe shipboard working environment. It was particularly evident during the management communication with crew at ship visits (see section 6.3) when shipboard communication was dominated by spot inspections of crew's behavioural compliance. As a consequence, it brought about considerable negative impacts on crew such as increased psychological pressure and a greater workload.

Although it was argued that the management control over workplace OHSM practice was important for organisational OHSM in order to cope with non-compliances (Levenstein and Tuminaro, 1997; Hutter, 2001), the study of shore-ship communication, together with the discussions in this section, showed that the shore management control played a very limited positive role in improving shipboard OHSM. The situation emerged in this study was similar to early empirical research findings:

> The surveillance of captains, and rewards and punishments for captains, and the financial incentives to owners, charterers, and insurers, along with other factors…do not encourage safety and indeed encourage risk. The encouragement

> of risk induces the owners and operators of the system to discard the elements of linearity and loose coupling that do exist, and to increase complexity and tight coupling (Perrow, 1999, p.188).

Larsson (2000, p.199) observed that it is common that management appear as 'absolute actors exerting control and enjoying the economic results of the activities of numerous operating units' with less attention paid to workers' life and health. In his study, he doubted the notion of 'responsible employers', which has lost its real sense. The finding from this study showed that when employers compromised their safety standards under the strong pressure of market competition. This point was interpreted in section 9.2.2 in terms of the conflict between efficiency, profit and safety. Also, it is widely addressed in the literature that an OHSMS was basically embedded in authoritarian ideology, and as such does not encourage management-employee communication (Hale *et al.*, 1998; Nichols and Tucker, 2000; Nielsen, 2000; Frick *et al.*, 2000, p.5). Such a management system left power and control in the hands of management rather than employees (Wokutch and VanSandt, 2000). Under such a circumstance, employees' involvement does not necessarily provide them a means to question corporate objectives or allow them to participate in organisational decision-making processes (Webb, 1995). This situation is in line with the result of my study, which showed that shore-ship communication contributed little to the improvement of shipboard OHSM, and the quality of workplace OHSM can be fundamentally compromised.

In brief, the communication for the management control showed that shore management did not help improve shipboard OHSM with their dominant management power. The field work observation as well as interview data presented in the data chapters showed that shipboard OHSM was generally degraded, rather than improved.

9.3.3 The Quality of Feedback in Safety Reporting and the Limitations of Its Role in Organisational Learning

OHS indicators have been widely used by shipping companies for the measurement of the quality and outcomes of their OHSMSs, as described in section 4.3. However, my research revealed that influences on ship to shore communication may significantly influence the 'quality' of OHS indicators as one of the major elements of an OHSMS.

Principally, such indicators are statistical data reported from ship's crew, particularly concerning nonconformity reporting, accident reporting and hazardous situation reporting,

as discussed in Chapter 7. However, bad news does not travel easily up the corporate hierarchy (quoted by Hopkins, 2000) and a common problem demonstrated in mine and other studies was that safety-related events or information were not communicated (reported) to relevant decision makers, and under-reporting was omnipresent (see also for example Ellis *et al.*, 2010; Bhattacharya, 2011; Oltedal and McArthur, 2011). My study showed that although the required reporting was well defined in the OHSMSs of both companies, some of the OHS related problems were not truly reported to the shore management and under-reporting and biased reporting were also commonly seen among crew. The reasons for this failure of communication were the various immediate and underlying factors identified in this study that were mostly concerned with the crew's job insecurity. As a consequence, some of the safety-critical problems were not entered into the reporting system and could not be seen by shore management.

In terms of the continuous improvement that OHSM theory suggests should follow from good feedback, my study revealed that ship-shore communication played a very limited role in facilitating such organisational learning and, as a result, contributed little to the continuous improvement of shipboard OHSM.

Cooke and Rohleder (2006) identified the main components of safety-related communication that underpinned the operation of an OHSMS. They are: identification and response, reporting, investigation, identification of causal structure, making recommendations, communication and recalling incident/accident learning, and finally implementing corrective actions (ibid, p.217). They argued that communicating knowledge originating from incidents both internal and external can validate and strengthen the management system itself. They are 'especially important for signifying improvement opportunities' (Tucker, *et al.*, 2002, p.123). Therefore, they could have a great potential to contribute to ongoing organisational learning that is essential for continuous improvement of OHSM (Sitkin, 1992; Tucker *et al.*, 2002). However, the problem of under-reporting and biased reporting, as identified in my study, suggested that it significantly reduced the potential value of such reported information for organisational learning and improvement of workplace OHSM. For example, avoiding critical cases and dwelling on trifles reduced the value of the role of reporting in promoting organisational learning (see section 7.3.5). Also, in response to management's requirement to report near miss cases, crew tended to report innocuous cases such as misplacing flour in the galley and mis-entry of log records

and these reports made little positive sense for shore management or crew on other ships. Under such a circumstance, safety-related communication does not meaningfully help with continuous improvement of OHSM in this study.

It has also been argued in the literature that incident investigation is an important component of incident learning systems (Cooke and Rohleder, 2006). They claimed that a reporter should be included in an incident investigation process. But here again, my study showed that crew were generally excluded from an investigation team and there was no chance for them to participate in this process. Therefore, it was not difficult to understand crew's complaints that investigation reports are always a violation of procedures, as indicated in section 7.3.3. Although the role of safety information communication was assessed as generally positive in promoting OHSM, as seen in section 5.3.2, the value of safety information communicated to crew was discounted in terms of its role in promoting organisational learning and continuous improvement of OHSM.

In Chapter 8, it was stated that crew were encouraged to make suggestions that could contribute to the improvement of OHSM. The reality was that crew did have some valuable ideas, but were affected by factors such as the bureaucratic practice of the management, the shipboard hierarchy and Chinese cultural elements to the extent that some such good practices and suggestions were not communicated to the shore management and did not contribute to the improvement of OHSM. Zwetsloot (1995) found that if a management system did not support creativity and experiment – a crucial prerequisite for learning, any efforts for continuous improvement of OHSM would be fruitless. My interview data and field observations indicated that there was no evidence indicating the occurrence of creative and constructive communication with an attempt to improve OHSM. It therefore again suggested limited chances for organisational learning and continuous improvement of shipboard OHSM.

9.4 INDIRECT EFFECTS ON CREW'S HEALTH, SAFETY AND WELL-BEING

The study found that in some respects, rather than improving the health and safety experience of crew, communication from the company management may have actually served to undermine it in practice, no matter whether it was communication at ship's sailing (technology-based communication) or during ship visits (face-to-face communication). In this respect many of the crew on the four ships experienced psychological as well as

physical pressures in the process of interaction between shore management and ship's crew that may have effects on their health, safety and well-being. These are discussed in the following section.

9.4.1 Psychological Pressure

In section 6.2.2 and 6.2.3, the data strongly suggested that shore to ship communication leads to certain levels of psychological pressure on crew. In sub-sections of section 7.3, although such pressures were not explicitly stated, they can be inferred from the data.

Crew holding senior management positions bore higher psychological pressures than the rest of crew. This was particularly true for ship captains when making decisions balancing relationships between safety and efficiency. The consequence was that his decision making was strongly influenced by communication with the shore management. Perrow (1999) observed the great pressure borne by a captain on tight schedules given the fact that captains are usually judged by their ability to stick to sailing schedules. Many respondents in that study acknowledged strong pressure and even censure if a ship failed to meet established schedules or refuse to sail in bad weather conditions (ibid). The examination of shore to ship communication in my study shows similar situations. It was featured in examples such as the communication between the shore management and a captain for a ship's berthing operations in an adverse natural environment and without sufficient tug services, as illustrated in section 6.2.2. The consequences of similar communications may contribute to an accumulation of psychological pressure within the crew. In the literature, the importance of control over work was addressed by Karasek (1979) in his famous demand and control model. He noted that workplace stress is a function of how a worker is commanded and to what extent the worker has the controlling power over his own responsibilities. Based on the empirical research by scholars such as Johnson and Hall (1988), Johnson *et al.* (1989) and Johnson and Hall (1994), this model was extended with another dimension, i.e., worksite social support, addressed as 'Job Demand-Control-Support Model'. One of the categories in the model is labelled as 'high strain', which means that there are high demands from an organisation, low control over responsibility and a low level of social support. The study of shore to ship communication revealed the high demand from shore management and the low level of autonomy for the crew. In addition, the distance between shore and ship as well as the lack of communication during management's ship visits (section 6.3) suggested a low level of social support from

shore management. In this sense shore to ship communication for management control can be seen as one of the major sources leading to crew's high strain in their work.

The major factor affecting crew's safety reporting (upward communication) identified in section 9.2.1, i.e., was the crew's concern over self interests including their salary, reputation, promotion and job security. Bohle and Quinlan (2000) noted that the affect of employees' self-interests can induce psychological pressure and lower morale. Apart from psychological pressure, crew also bore physical stress, which will be discussed next.

9.4.2 Physical Stressors

During my voyages on the four ships, I observed that shore to ship communication (for management control) was associated with hectic schedules and long working hours. These are identified in section 6.2.3. They contributed noticeably to the crew's physical stress in addition to psychological ones.

For the crew in lower ranks, they were likely to bear more physical stress due to the nature of their work (involving much manual labour work and high workloads), which further intensified their routine workload. I recorded many examples in my field notes.

For officers, many of them complained that there was too much paperwork that needed to be completed and reported to the shore management. In section 6.3.2 data showed that the paperwork occupied a significant amount of crew's duty time, as well as their off-duty time. Such work was considerably intensified before a ship visit or external inspection. Apparently, such additional bureaucratic demands for audit trails, as noted in section 9.2.4, increased crew's workload and produced physical stress to crew.

One of the typical 'symptoms' from enduring physical stress was fatigue. Seafarer fatigue has been widely addressed in the literature in the shipping industry. It can cause both short term and long term OHSM consequences (Smith *et al.*, 2006; Smith, 2011). The consequences of fatigue are felt not only in terms of impaired performance and reduced safety, but also by decreased well-being and an increased risk of mental health problems. Both are also known to be risk factors for future chronic disease (Smith *et al.*, 2006, p.9).

In Chapter 7, several personal injury incidents were mentioned and recorded in my field

notes. According to the ship's crew, they were mainly caused by fatigue. The under-reporting of those injuries suggested poorer effect on some of the crew's health and safety. In addition, as just mentioned, fatigue can lead to reduced safety. In severe cases fatigue may lead to loss of life, property as well as damage to the environment (Houtman *et al.*, 2005). From a holistic perspective, Smith *et al.* (2006, p.8) identified three major factors that caused seafarer fatigue: operational (e.g. port frequency), organisational (e.g. job support) and environmental (e.g. physical hazards). In this study the examination of communication between management and crew highlighted the organisational factor which contributed to crew's fatigue, or in a general sense, their physical stress.

9.4.3 The Combined Effect

The above two sub-sections discussed shore-ship communication and its potential influence on crew's psychological pressure and physical stress. In reality these stressors usually occur concurrently. For example, the examination of shore to ship communication showed that it was closely associated with a ship's hectic sailing schedule as well as long working hours. They contributed to both psychological pressure and physical stress on crew. Similar joint effects is commonly seen onboard the four ships I observed. It implies that these stressors can have indirect effects on crew's health, safety and well-being.

It is widely recognised that psychological pressure can affect anyone's health condition. Under the prolonged influence of psychological pressure, employees can acquire 'lowered immune function, ulcers, cardiovascular problems, anxiety, and depression' (Levenstein and Tuminaro, 1997, p.43). Although it was not the intention of this study to investigate the extent to which both psychological pressure and physical stress affect crew health and safety, some crew members did express their deteriorated health and serious physical disorders during the interviews. It shows that crew's health, safety and well-being could be affected as a consequence of communication.

Physical stress can also affect a crew's psychological status. Smith *et al.* (2006) argued that physical stress affects worker's social interactions beyond their work time. In the shipping industry, its influence should not be neglected onboard ships where crew worked and lived together in a confined environment. A lack of social interaction can have certain effects concerning work cooperation and OHSM practices onboard ships. Negative influences from physical stresses should not be ignored.

In section 9.2.3 I discussed the extent to which shore-ship communication led to limits to a crew's autonomy. The ability of an employee to control his work pace and methods is closely related to their 'health, satisfaction and well-being' (Levenstein and Tuminaro, 1997, p.44). An employee benefits from strong control over his work and this helps reduce the impact of additional workload. On the contrary, a lack of work autonomy would have a negative influence on an employee's OHS. This study of communication between management and crew in the Chinese chemical shipping companies shows that the crew on four ships experienced such problems of reduced autonomy as described. In this sense, they may have added to negative influences for crew's OHS.

During interviews on board, many crew also expressed the view that their squeezed time and limited energy (as a result of hectic schedules and long working hours as described in section 6.2.3) affected their safety reporting to shore management. This was one of the practical reasons affecting upward communication. A similar situation is described in the study in the Norwegian shipping industry made by Oltedal and Wadsworth (2010). Shore-ship communication in safeguarding crew's OHS was thus weakened by both fatigue and stress.

9.5 SUMMARY OF DISCUSSION

This chapter started with the exploration of the contexts of communication between shore management and ship's crew. The exploration identified some of the key factors underlying the nature of workplace and organisational communication. They include hierarchy, power and discipline in management and crew's concerns for their personal income, reputation, job promotion and security. The result was that on the one hand these factors enhanced downward communication and on the other hand limited upward communication. The discussion also extended to an assessment on the relationship between efficiency, profit and safety that were treated in both companies and found that workplace safety was overridden by the commercial interest of the business. As a consequence, crew's upward communication (safety-related problem reporting and safety suggestions) was very limited, which suggests that crew's participation in OHSM both in individual and collective forms was very limited. In brief, the overriding conclusion that emerges from my data chapters is that it is not the nature and types of communication that matter. What really influences OHSM is the prioritisation of effective and efficient production over other matters in the

decision making processes in the company. This prioritisation dominantly reflects the management's pursuit of the economic interest rather than safe production.

Moreover, two secondary factors were also identified in this study. First it showed that the Chinese cultural context also affects ship-shore communication. In a sense, parallel to that of the profit motive, it helped to promote downward communication while it hindered upward communication within an organisational hierarchical structure. Second, the role of monitoring compliance, involving powerful industrial bodies such as oil majors was also influential on the nature and frequency shore-ship communication while adding an increased workload and stress to crew.

As a result, communication for shore support was comparatively insignificant in aiding the promotion of OHSM in the absence of material resources from the shore management. Also, the communication for management control showed that the management's tight control over ship's sailing schedules and biased focus on crew's behaviour were unable to contribute to the improvement of workplace OHSM. Indeed, they contribute to worsening OHSM outcomes. Furthermore, the prevailing under-reporting and biased reporting suggest that the OHS indicators were only a nominal symbol and could not truly reflect shipboard OHSM situation. Finally, the study revealed that shore-ship communication was not helpful for reducing shipboard OHS problems and promoting organisational learning. Thus, the continuous improvement of shipboard OHSM practice was found not to have been achieved.

In term of its effects on crew's health, safety and well-being, the study suggested that in some respects – especially in relation to stress and fatigue, the form and content of shore to ship communication may have actually served to worsen crew's health and safety experience on board ships, both in terms of psychological and physical stressors.

In general, this Chapter summarised and discussed the key themes that emerged from the previous four data chapters. From the perspective of shore-ship communication, this study showed certain positive evidence in terms of the shipboard OHSM. The management's support can be useful. In addition, Chapter 4 discussed both the positive and negative roles of supply chains in relation to workplace OHSM. In this study the major actor in supply chains, the oil majors, imposed pressures on both shore management and ship's crew and

affected internal communication between them, their positive role in health and safety management should not be underestimated. For example, the high-standard inspection syllabus and strict on-the-spot inspections from oil majors can push company management to improve and investigate OHSM practices. Nevertheless, a majority of the collected data suggests that the OHSM practice in both companies is still far from ideal and fails to meet the stated safety policies and objectives of both. Further discussion and conclusions are presented in Chapter 10.

CHAPTER 10 CONCLUSIONS

10.1 INTRODUCTION

Having discussed the contexts of communication – factors underlying the nature of workplace and organisational communication and the influence of shore-ship communication on shipboard OHSM, it is time to summarise the study and draw conclusions. It must be recognised that this study has been constrained by the time and cost factors experienced by many PhD researchers. Also, the limited maritime literature sources as well as a comparative lack of previous empirical studies (perhaps due to the difficulties of field work, as described in Chapter 3) have served to limit the scope of this study. Furthermore, organisational communication is omnipresent and complex, while this PhD study is mostly focused on shore-ship formal communication. Notwithstanding, these limits have not forestalled some major findings that emerged from the study. In this Chapter I present my main findings concerning the role of this form of communication and their implications for the effectiveness of OHSM on board vessels. My presentation of these findings leads to some conclusions concerning communication in effective OHSM and also suggests implications for the effectiveness of OHSM regulatory strategy in the shipping industry, and in particular for the role of the ISM code.

As discussed in the previous chapter, my findings indicate that while communication clearly plays a role in determining OHSM practice, what determines the nature and outcomes of such communication more fundamentally, is the prioritisation of efficiency and profit by the companies concerned rather than safety. Although this study was conducted in the Chinese chemical shipping industry, this prioritisation is not in my view determined by the particular conditions of Chinese chemical tankers (while acknowledging the fact that the Chinese cultural elements certainly aids this domination as I have discussed in section 9.2.4). My findings resonate well with the wide literature on merchant shipping generally and globally, which emphasises this a similar observation (Parker, *et al*., 1997; Couper, *et al*., 1999; Alderton, *et al*, 2004). Thus it can be seen that imbalance between profit and safety is not a particular feature of the Chinese chemical shipping industry but symptomatic of such imbalance found in other employment situations globally.

It has been commonly recognised that conflicts emerge when safety, efficiency and economic return are conflated by company management (Nichols and Tucker, 2000;

Panopoulos and Booth, 2007). In my study, it is easily seen from the four data chapters (Chapter 5-8) that there was a significant gap between what the management of the companies studied asserted or expected concerning OHSM and how the crew responded and what really happened on board. This showed that a dichotomy of purposes of communication existed between the shore management and ship's crew. Such dichotomy highlighted the strong influence of conflicts of interests between the management and crew. In this regard, it has been previously attested in the sociological literature that an 'identity of interest' between the management and the managed remains unproven (Nichols and Armstrong, 1973; Nytro *et al.*, 1998; Gunningham and Johnstone, 1999, p.9; Nichols and Tucker, 2000 and Hutter, 2001, p.312), and such conflict remains unchanged in modern organisations. In this respect, my study of the Chinese chemical shipping industry reaches a similar conclusion.

The priority of profit over safety is basically embedded in the fundamental conflicting interests between the shore management and ship's crew. Together with some cultural factors peculiar to the Chinese context such as respect for authority and avoidance of direct conflict, as well as some features of industrial organisation such as the inspection by oil majors, they strongly influenced the nature and role of communication between the management and crew, and in turn, had a significant impact on the practice of OHSM.

10.2 MAJOR FINDINGS

The study showed that shore management and crew communication in the two Chinese chemical shipping companies examined primarily took an asymmetrical (top-down) form, reflecting the power relations within these companies. Moreover, the study found that the communication was generally disengaged with OHSM concerns, which contributed to an unfavourable shipboard working environment, and suggested a limited outcome of OHSM in the Chinese chemical shipping industry.

10.2.1 Asymmetrical Communication

The study found that, for the management, hierarchy, positional power and economic concerns were major factors influencing, or more exactly, reinforcing downward (shore to ship) communication. Examples indicating such influences are indicated in Chapter 5 and 6 and were particularly evident in the orders and instructions given by the shore management during a ship's sailing at sea.

On the other hand, for the crew, their concerns about salary, personal reputation, job promotion and security, as stated in section 9.2.1, were major factors influencing, or more exactly, hindering upward (ship to shore) safety reporting. Consequently, the data shows that reporting safety related problems was purposefully manipulated and withheld by many of the crew. The result showed that under-reporting was prevalent among crew onboard four ships. Many examples of this are presented in Chapter 7. In addition, external industrial bodies in the shipping industry, particularly in the chemical shipping sector, could have significant influence on upward (ship to shore) communication. From a fear of exposing workplace problems to external inspectors (their check of written records), crew hesitated to make written report to their company, since their perceptions were that reported problems could be easily observed by inspectors and could incur further inspection and ultimately jeopardise their economic interests and job security (see section 7.3). The study suggests that the upward safety communication, particularly written communication was therefore significantly withheld by crew.

While the shore management all agreed that crew's reasonable suggestions or reporting of good practices could make significant contributions to improvement of OHSM, the study found that the crew was not really motivated to make such reports. Because of the bureaucracy of the shore management, the limited role of trade unions units on board ships and the precarity of seafaring occupation, the crew had little incentive to report such good practices. In addition, the shipboard hierarchy also affected the crew's attempt to report. For a ship's crew, particularly the low ranks, the inequality perceived between them and shore management posed significant barrier to communication and my findings showed that crew's willingness to give suggestions to shore management was limited.

In addition, the study showed that elements of Chinese culture, identified in section 7.3.2, 8.3.3 and 9.2.4, may also have contributed to weak upward communication. As stated in section 8.4, the study in the Chinese context made it difficult to distinguish the cultural influence from that of power imbalance and seafaring labour market. Thus, the strength and importance are difficult to ascertain due to the lack of comparable research on other nationalities. Though, this study suggests that certain cultural traditions in the Chinese context would seem important barriers to effective communication. The large power distance (in this study that between the Chinese managers and crew) and tendency of

centralised decision making process in organisational context help explain why crew's contributions to safety reporting and safety suggestions remained minimal. It added some weight to the imbalance of communication between the two.

Many studies have showed that open and well-balanced communication in an organisation has special implications for managing OHS activities effectively. In general, this study shows that the communication between shore management and ship yielded the opposite situation for the above reasons.

One point worth mentioning during the study was that peer communication was observed between crew on one ship or between different ships, but it was discretionary and subject to personal relationships. Although the study showed some positive signs of such communication, they were unrelated to the shore-ship communication on which the study focused. As such they did not follow from such communication, but were separate from it and at best, they could be said to represent ways in which the crew made their own sense of how to work safely on ships.

10.2.2 Communication Disengaged with the Concern of OHSM

Within the hierarchical system of both companies, as illustrated in the introduction to the cases (see Chapter 4), the management occupies the leading position. In this respect, the hierarchical structure strengthened the management's role in decision making on OHSM related issues. Although the management asserted that crew's decision making was respected, the examination of shore-to-ship communication showed that the decision making process in both companies remained centralised and the crew's decision making actually played only a limited role. As a consequence of *tight* management control, ship-to-shore communication left the crew with little autonomy in deciding OHSM related issues.

The study revealed that the main purpose of technology-mediated communication was to give orders or instructions for ship's sailing schedules, which was mostly prioritised by the shore management in both companies (as shown in section 6.2.2 and 9.2.2). It indicated that the primary consideration of the management was to satisfy the requirement of charterers with fast delivery of cargoes, while safe delivery of cargoes became their secondary consideration. As for the crew, they were vulnerable in terms of their income and job

security in the presence of the centralised management's power over them and rewards and punishment scheme. The sailing schedules placed them under substantial pressure, which undermined their ability to deal with OHS issues and caused them to believe they cut corners in delivering the OHSM. The study revealed that the primary driving motivation of the management was their business interest. The management's interest of business orientation dictated the content of the technology-mediated shore to ship communication process. In addition, the communication during ship visits showed the management's focus on crew behaviours and performance rather than a concern with creating a safe working environment. In general, the shore to ship communication showed that the shore management failed to prioritise 'safe place' approaches to OHSM and emphasised instead the safety related behaviour of the crew.

Although safety reporting was made at regular intervals, the problem of under-reporting and biased reporting suggests that it contributed little to the effectiveness of OHSM. Similarly, bureaucratic management, the inactiveness of shipboard trade unions units (in C1) and the precarity of seafaring occupations combined to suggest that crew (both individually and collectively) contributed little to the improvement of OHSM in upward communication.

In the literature, incorporation of health and safety considerations into the communication process has been highlighted and is regarded as the key to determining workers working conditions (Shaw and Blewett, 2000; Frick *et al.*, 2000). To a large extent, the study revealed that, affected by the conflicts of interests between the shore management and ship's crew, their communication generally lacked of serious OHS considerations in their working practice. In brief, it revealed that, from both the management and crew's perspectives, shore-ship communication incorporates a very limited concern for OHSM.

10.2.3 Communication Contributing to Unfavourable Working Environment

The examination of shore-ship communication showed that not only did it not improve OHSM, it actually contributed towards a poor shipboard working environment rather than an improved one.

The technology-mediated communication imposed significant psychological pressure and physical stress to the crew, as shown in section 6.2 and 9.4. In a similar sense, ship visit

communication between the management and crew brought about a significant increase in work load (including practical work and paperwork) for the crew and affected the crew's daily work routines and rest time. It further intensified crew's psychophysical pressure. In all, the shore to ship communication for management control showed that those combined effects to crew's OHS could have indirect effects on crew's health, safety and well-being. The negative implications for crew's shipboard working environment were considerable.

The under-reporting/biased reporting of safety related problems implied that those problems, particularly those with so-called *less consequences*, remained on board. Typical examples can be seen in section 7.3.3 and 7.3.4 (unreported personal injury incidents and near misses). Although 'self-digestion' of the problems on board was mentioned by some of the crew (see section 7.3.5 for explanation), it only meant that crew were aware of them and managed to deal with them on their own. It never meant an appropriate solution to the problems in the absence of substantial management support. As a consequence, some of them remained unsolved and can pose significant threats to crew's OHS as well as their working conditions. In addition, crew's limited autonomy and participation in OHSM as identified in section 9.2.3 suggest that they played a very limited role in improving shipboard OHSM.

On the ships in the present study, although the management in both companies asserted that their safety performance was good, this however was not the crew's perceived experience and did not mean that they worked in a safe working environment, as illustrated in the data and discussion chapters.

10.2.4 The Limited Outcome of OHSM

Based on the previous discussions, this sub-section attempts to give an overall assessment on shore-ship communication and its influence on the outcome of OHSM in both companies. Chapter 5 showed that, in general, shore to ship communication played some positive roles. For example, it helped inexperienced crew solve some technical problems. Also, the communication of safety information helped a majority of crew learn lessons from past accidents and improved their workplace safety performance and behaviours. They were the positive outcomes of OHSM that were identified from the study.

However, these were offset by a number of negative aspects. For examples, the

communication showed the limited willingness of the shore management to supply material resources identified by crew as necessary for OHS. In Chapter 6, the technology-mediated communication showed the management's emphasis on sailing schedules rather than proper OHSM. As a consequence, the combined effect of psychological and physical pressures on crew is very likely to worsen crew's OHS and undermine shipboard OHSM practice. In brief, given the positive role of shore technical support and safety information support, its influence on workplace OHSM was very likely to be undermined by the lack of material supply and tight management control.

Meanwhile, the study of ship to shore communication showed the prevalence of under-reporting and biased reporting (Chapter 7). It meant that the real shipboard situation was not truly reported. And it challenged the value of OHS indicators widely used in OHSMSs. In addition, the examination of the effectiveness of safety suggestions made by crew shows that they contributed little to the improvement of the OHSM (Chapter 8) due to the factors such as the managerial influence, the shipboard hierarchy and Chinese cultural elements. The under-reporting and biased reporting of safety related problems from crew with few suggestions given by them for improvement of OHSM implies that crew's participation in the process of OHSM was limited. Section 2.6.2 reviews the literature that demonstrates how worker participation plays an important role in OHSM. The limited crew's participation emerged from this study suggests that their overall contribution however was weak in this respect and affected the quality of safety information, and organisational learning. In addition the psychophysical pressures borne by crew also affected the arrangements for individual or collective learning activities onboard. In this sense, its role in continuous improvement of OHSM was limited.

In all, the asymmetrical communication (mainly top-down), the disengagement of OHSM concerns in shore-ship communication and the unfavourable shipboard safe working environment together suggest the expected outcome of OHSM, as stated in the policies of OHSM in both companies, has not been achieved. In the literature chapter the OHSM policy was highlighted as one of the leading principles of an OHSMS. However, the literature also points out that in practice it frequently happens that the way of achieving an OHSM policy could be opportunistic and even in conflict with the goals of a safety policy (Hackman and Wageman, 1995). The slogans and arguments originated from a safety policy could even be contrary to the reality of every day practice (Vokutch and VanSandt,

2000). This study provided further evidence of these tendencies – obvious problems were not identified in terms of shore-ship paperwork (written) communication. Pro forma, served as evidence that the OHSM objectives were achieved, but the investigation showed that the *reported* events failed to reflect the real conditions onboard. In this sense, the OHSM practices in both companies indicated that crew's compliance of companies' OHSM policy remained superficial.

To sum up, the discussion showed that shore-ship communication in two Chinese chemical shipping companies was of limited help in safeguarding crew's OHS and shipboard OHSM practices. Although both company's OHS policies stated in their management systems (as illustrated in the introduction to the two cases in Chapter 4) was by no means questionable, there was a significant gap between what was expected and what really happened onboard. In this sense the result of the study suggests a very limited outcome for OHSM in the Chinese chemical shipping industry.

10.3 IMPLICATIONS OF THE FINDINGS FOR THE ROLE OF COMMUNICATION IN EFFECTIVE OHSM

Since shore-ship communication is an important aspect of the framework of OHSMSs, my findings suggest a need to rethink its role in promoting effective OHSM. In the wide spread discussions on adopting such systems in the literature, many authors agree that the intervention of an OHSMS cannot achieve successful outcomes of OHSM without certain essential pre-conditions. To summarise, among those identified pre-conditions, *available resources to support OHS activities, the senior management commitment, integration with OHSM concern, and independent employee representation and participation* were highlighted by Hutter (2001), Gallagher *et al.* (2003, p.77), Baird (2005), Akerlind *et al.* (2007) and Bornstein and Hart (2010, pp.63 & 64). In this study, the data presented has shown these preconditions remained unmet. The special focus on economic returns in the frequent use of telephone communication as a main channel for management control indicates that the management's commitment to OHSM was not paramount (as shown in sections 9.2.2 and 9.3.2, respectively). Crew's limited autonomy and participation in OHSM suggest their weak (collective) bargaining power and their scant contributions to the improvement of OHSM, as indicated in section 9.2.3.

The absence of those essential pre-conditions resulted in only partial delivery of the

OHSMSs in ways similar to those found by Gallagher *et al.* (2003, p.77), who explained that partial delivery of an OHSMS could equate with the completion of the paperwork component, with the applied component lagging far behind. Hopkins (2000, p.147) further argued that safety management systems can degenerate into nothing more than complex paper systems of paper. The emphasis on paperwork has therefore been criticised as a bureaucratic practice that could hinder effective operation of OHSM (Strathern, 2000; Bhattacharya, 2009). Onboard the ships in the present study, it was found that although the paper trail and tick box approach was completed, actual safety practice remained poor. It showed a noticeable mismatch between the written records and real practice. In this sense, the partial delivery, as shown in this study, contributed to the limited outcome of implementation of the OHSMSs in both chemical shipping companies.

10.4 IMPLICATIONS FOR MARITIME REGULATORY STRATEGY

The findings of this study, together with previous studies, suggest that there is an urgent need for maritime policy makers both at international and national levels and for industrial practitioners to re-think the role of the ISM Code in promoting OHSM in the international shipping industry to re-consider maritime regulatory strategies.

In the literature chapter the trend towards regulated self-regulation in the international shipping industry, as illustrated by the ISM Code, was discussed. As stated in section 2.6.1, the Code, required shipping companies subject to its application to establish management systems to manage OHS activities. However, from a shore-ship communication perspective, the study of the Chinese chemical shipping industry showed that crew's OHS and shipboard OHSM practice were not improved by its implementation. *The less positive OHSM consequences and more negative ones* both suggest the failure of the Code to improve the reality of OHSM practice. This has also been pointed out in previous studies in the international shipping industry (see section 1.1 and section 2.6.1). As elsewhere, these findings suggest need to examine and rethinking regulatory strategies (Quinlan and Mayhew, 2000; Aronsson *et al.*, 2002 and Saksvik and Quinlan, 2003) and re-consider its role in promoting OHSM in the shipping industry.

Gunningham (2007) has emphasised that the regulatory approaches should be both context- and industry-specific. Although the ISM Code was dedicated to address the international shipping industry, it failed to address the significant *contextual* variations between

countries/regions that could significantly affect the outcome of the OHSM. In this regard, it is worth noting that previous studies on the impact of similarly conceived regulated self-regulation identify significant gaps between countries in the operation of international measures (Frick and Wren, 2000; Karageorgiou, *et al.*, 2000; and Bruhn, 2006). Summarised from these authors work, the contextual factors included, but not limited to, socio-economic situation, basic OHS laws and traditional practice, legal infrastructure that governs organisational structure, particularity of the sector, labour market, organised labour and/or trade unions. In the present study a typical example of such contextual differences was the different (lower) level of worker participation in OHSM in the Chinese context as opposed to that in other countries.

Given the physical distance between the shore office and a ship, one of the main management practices for a company was to rely on the assessment of written reports submitted by crew to measure that crew's operational practice. The study revealed a considerable mismatch between written reports and real shipboard practice. It indicated the inadequacy of paperwork-based assessment practice. The problem of relying on written reports to judge the success and failure of an OHSMS in the shipping industry has also been addressed by other authors, such as Anderson (2003) and Bhattacharya (2009 and 2011). Therefore, it seems that there is a need to address the 'audit trail' management approach in the future.

In section 10.2.1 in the Code, it states that the Company should arrange ship visits and work inspections at appropriate intervals (IMO, 2002b). In this study, the data suggests the management's ship visit communication not only increased crew's psychological pressure, but also contributed to heavier workload. It was found that the skewed focus on crew's safe behaviour helped little in improving shipboard OHSM practice. It implies that the current regulatory approach to enforcement for the adoption of OHSMSs and implementation of the Code should be revisited and reinforced.

It is argued that regulator-led 'advice, encouragement and coercion' are essential for companies without a natural interest in safety, and there might be a need for 'deterrent penalties' to ensure meeting OHS standards (Genn, 1993, p.219). Nichols (1997, p.212) noted that one of the strategies to improve workplace OHSM was that the whole process of health and safety management be subject to external monitoring and external enforcement.

Thus, it is understood that the control of the process underpins the operationalisation of an OHSMS. In the context of the shipping industry, problems emerging from day-to-day work processes are not easily monitored due to the gap of physical distance. Typically, the inspection or audit conducted by maritime administrations or external industrial bodies mainly occurred in one or two days during a visit to a ship in port. The physical distance makes it difficult for external inspectors to make any attempted random spot check on board a ship since it is always outside at sea and not easily accessed. Most significantly, the research voyages revealed that many of the problems related to process management were exposed when a ship was at sea. Under such a circumstance, it might be a good idea that an inspector/auditor could be arranged onboard a ship for a longer observational period, say, to sail with the ship for a (short) voyage. Although previous studies showed the constraints of resources for inspection and control (Walters, 2005), in doing so, it is believed that more problems regarding the process management could be witnessed and identified.

Finally, in section 2.6.2, the ISM Code was assessed in comparison with other regulatory schemes. One of the weak points in the Code was that it did not explicitly address the role of seafarers in OHSM. Since the Code had an immediate impact on the development of OHSMS in a shipping company, it was understandable that the role of seafarer participation in OHSM could not be assured. The low level of seafarer participation in OHSM identified in this study suggests the need to strengthen the seafarer's role in OHSM in the Code.

In all, as a researcher, I am not in a position to make detailed suggestions for how changes should be made in the identified areas in practical terms. However, this study does emerge some valuable implications for re-shaping maritime regulatory strategies.

10.5 SUGGESTIONS FOR FUTURE STUDIES

Adkins (2002, p.333) pointed out that 'reflexivity is recommended as a critical practice for social research'. At this stage when the thesis is ready to be concluded, it seems wise to have some reflexive thinking on the topic of this study that could potentially pave the way for future studies. This study focused on the formal communications between shore management and ship's crew. The study adopted a functional approach and paid special attention to key subject areas about OHSM related communications. The focus of this study leaves room for more studies of this industry.

Basically, communication itself is everything and everywhere in our social lives. In a similar sense organisational communication is omnipresent and complex. Apart from formal (oral and written) communication, there exists informal communication that occurs in parallel. It is particularly evident in relationship-oriented societies such as in China (see section 2.7.2 and 8.3.3). Grapevine systems and rumours are extreme examples of this kind. On some occasions informal communication can affect or even countermand formal communication, which can have a strong influence on the outcome of OHSM. Thus, informal communication is an area that should be studied in the future. In addition the interplay between formal and informal communications could also be explored.

My field work on board ships suggests that on board communication is a topic worth thorough investigation. Some of the data I collected were about this though they could not be used in consideration of their relevance to my research question. As mentioned in section 9.2.1, there exists a relatively independent hierarchical structure on board a ship. The communication between the deck and engine room department, the vertical communication within each department should be systematically investigated. Meanwhile, how on board communication is affected by shore management might also be examined.

The previous topics that I addressed lie in the range of internal communication within an organisation. In reality internal communication can significantly be affected by management's and crew's communication with external bodies. For example, in this study, it showed the considerable influence of oil majors. Thus, the communication with relevant external bodies could be independently investigated. They include industrial bodies, such as oil majors and CDI; administrative departments such as the FSC, PSC, Vessel Traffic Service and port authorities as well as industrial service providers, such as cargo and ship surveyors, shipyard repair, ship-chandlers and local agencies. The investigation could be conducted by a selected important body or a group of bodies, depending on its research design.

To conclude, the above suggestions are made based on a literature review, particularly the review of maritime literature, and years of personal experience working with this industry. Although I am not in a position to pinpoint specific research topics for other researchers, the proposed areas of study are certainly worthy of concern. Considering that this study was conducted in the Chinese context, the findings cannot be compared with other industries or

the shipping industry in other countries. A horizontal comparative study across industries/countries would be of interest to many in the OHSM field.

BIBLIOGRAPHY

Adair, J. (1988) *The Effective Communicator*. London: The Industrial Society.

Adkins, L. (2002) Reflexivity and The Politics of Qualitative Research. In: May, T. (eds) *Qualitative Research in Action*. London: Sage, pp.332-348.

Akerlind, I., Schunder, S. and Frick, K. (2007) Health and Work Organisation. In: Ulf, J., Guy, A. and Robin, R. (eds) *Work Health and Management Control*. Stockholm: Thomson Fakta AB, pp.77-98.

Aksorn, T. and Hadikusumo, B.H.W. (2008) Critical Success Factors Influencing Safety Program Performance in Thai Construction Projects. *Safety Science* 46, pp.709-727.

Alderton, T., *et al*., (2004) *The Global Seafarer: Living and Working Conditions in a Globalised Industry*. Geneve: ILO.

Allen, M. W. *et al.* (2008) Factors Impacting the Perceived Organisational Support of IT Employees. *Information & Management* 45 (8), pp.556-563.

Alper, S., Tjosvold, D., and Law, K.S. (2000) Conflict Management, Efficacy, and Performance in Organisational Teams. *Personnel Psychology* 53, pp.625-642.

Amery, W.K. (1999) Coming Full Circle in Pharmacovigilance: Communicating Safety Information to Patients through Patient Package Inserts. *Pharmacoepidemiology and Drug Safety* 8, pp.121-129.

Anderson, P. (2003) *Cracking the Code: the Relevance of the ISM Code and Its Impact on Shipping Practices*. London: Nautical Institute.

Antonsen, S. (2009) Safety Culture and the Issue of Power. *Safety Science* 47 (2), pp.183-191.

Appleman, J.E. and Bratnick, M. (2001) Safety Communication Critical in Hard Market. *National Underwriter* 105 (18), p.10.

Armstrong, P. and Armstrong, H. (2008) Indicating Occupational Health. *Policy and Practice in Health and Safety* 06 (2), pp.3-7.

Aronsson, G. *et al.* (2002) Work Environment and Health in Different Types of Temporary Jobs. *European Journal of Work and Organisational Psychology* 11 (2), pp.151-175.

Arslan, O. and Er, I.D. (2008) SWOT Analysis for Safer Carriage of Bulk Liquid Chemicals in Tankers. *Journal of Hazardous Materials* 154, pp.901-913.

Atkinson, P. and Coffey, A. (2001) Revisiting the Relationship between Participant Observation and Interview. In: Gubrium, J.F. and Holstein J.A. (eds) *Handbook of Interview Research Context and Method.* London: Sage Publications, pp.802-821.

Atkinson, P., Coffey, A. and Delamont, S. (2003) *Key Themes in Qualitative Research: Continuities and Changes*. Walnut Creek, Calif: AltaMira Press.

Ayres, I. and Braithwaite, J. (1992) *Responsive Regulation*. New York: Oxford University Press.

Bacharach, S. and Bamberger, P. and Mundell, B. (1993) Status Inconsistency in Organisations: From Social Hierarchy to Stress. *Journal of Organizational Behavior* 14 (1), pp.21-36.

Bailey, N. (2006) Risk Perception and Safety Management Systems in the Global Maritime Industry. *Policy and Practice in Health and Safety* 4 (2), pp.59-76.

Bailey, N., Ellis, N., Sampson, H. (2006) *Perceptions of Risk in the Maritime Industry: Ship Casualty*. SIRC, Cardiff University.

Bailey, N., Ellis, N., and Sampson, H. (2007) *Perceptions of Risk in the Maritime Industry: Personal Injury*. SIRC, Cardiff University.

Baird, D. (2005) The Implementation of a Health and Safety Management System and Its Interaction with Organisational/Safety Culture: An Industrial Case Study. *Policy and Practice in Health and Safety* 03 (1), pp.17-40.

Balka, E. and Freilich, J. (2008) Evaluating Nurses' Injury Rates: Challenges Associated with Information Technology and Indicator Content and Design. *Policy and Practice in Health and Safety* 2, pp.83-99.

Bamberger, M. (2000) *Integrating Quantitative and Qualitative Research in Development Projects*. Washington, D.C.: The World Bank.

Beijing Review (1988) *Attitude Survey of City Dwellers*. No.5, pp.24-28.

Bellaby, P. (1999) *Sick from Work: The Body in Employment*. Aldershot and Brookfield: Ashgate.

Bennett, J. and Foster, P. (2007) Developing an Industry-specific Approach to a Safety Management System. *Policy and Practice in Health and Safety* 05 (1), pp.37-60.

Bernard, H (1994) *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. London: Sage

Bhattacharya, S. (2009) *The Impact of the ISM Code on the Management of Occupational Health and Safety in the Maritime Industry*. PhD Thesis, Cardiff University.

Bhattacharya, S. (2011) Sociological Factors Influencing the Practice of Incident Reporting: The Case of the Shipping Industry, *Employee Relations* 34 (1), pp.4-21.

Bhattacharya, S. (2012) The Effectiveness of the ISM Code: A Qualitative Enquiry, *Marine Policy* 36 (2), pp.528-535.

Blau, P. M. (1964). *Exchange and Power in Social Life*. New York: Wiley.

Bloor, M. Thomas, M. and Lane, T. (2000) Health Risks in the Global Shipping Industry: An Overview. *Health, Risk & Society* 2 (3), pp.329-340.

Bohle, P. and Quinlan, M. (2000) *Managing Occupational Health and Safety: A Multidisciplinary Approach*. 2nd ed. Macmillan Publishers Australia Pty Ltd.

Bornstein, S. and Hart, S. (2010) Evaluating Occupational Safety and Health Management Systems: A Collaborative Approach. *Policy and Practice in Health and Safety* 8 (1), pp.61-76.

Braham, M. and Steffen, F. (2008) *Power, Freedom, and Voting*. Springer – Verlag Berlin Heidelberg.

Brown, G. and O'Rourke, D. (2003) The Race to China and Implications for Global Standards. *International Journal of Occupational and Environmental Health* 9 (4), pp.299-301.

Brown, G. D. (2007) Lean Manufacturing Comes to China: A Case Study of Its Impact on Workplace Health and Safety. *International Journal of Occupation Environmental Health* 13 (3), pp.249-257.

Bruhn, A. (2006) The Inspector's Dilemma under Regulated Self-regulation. *Policy and Practice in Health and Safety* 4 (2), pp.3-24.

Bruhn, A. (2010) Occupational Unity or Diversity in a Changing Work Context? The Case of Swedish Labour Inspectors. *Policy and Practice in Health and Safety* 07 (2), pp.31-50.

Bryman, A. (1988) *Quantity and Quality in Social Research*. London: Routledge.

Bryman, A. (2006) Integrating Quantitative and Qualitative Research: How Is It Done? *Qualitative Research*. 6 (1), pp.97-113.

Buchanan, D. and Huczynski, A. (1997) *Organizational Behaviour: An Introductory Text*. 3rd ed. London: Prentice Hall.

Bulmer, M. (2001) The Ethics of Social Research. In Gilbert, N. *Researching Social Life.* 2nd ed. London: Sage, pp.45-57.

Burns, R. (2000) *Introduction to Research Methods*. London: Sage.

Byers, P. Y. (1997) *Organisational Communication: Theory and Behaviour*. Boston: Allyn and Bacon.

Cariou, P., Mejia, M.Q. and Wolff, F.C. (2008) On the Effectiveness of Port State Control Inspections. *Transport Research* Part E, 44, pp.491-503.

Carr, L. T. (1994) The Strengths and Weaknesses of Quantitative and Qualitative Research: What Method for Nursing? *Journal of Advanced Nursing*. 20, pp.716-721.

CDI (2008) *The CDI Marine Scheme* [Online]. Available at: http://www.cdi.org.uk/marine_scheme.aspx [Accessed: 8 June 2008].

Celik, M. (2009) Establishing an Integrated Process Management System (IPMS) in Ship Management Companies. *Expert Systems with Application* 36 (4), pp.8152-8171.

Chapman, P.K. (1992) *Trouble on Board: The Plight of International Seafarers*. New York: ILR Press.

Chen, F. (2003a) Between the State and Labour: The Conflict of Chinese Trade Unions' Double Identity in Market Reform. *The China Quarterly*, pp.1006-1028.

Chen, M.S. (2003b) Workers' Participation and Their Health and Safety Protection in China's Transitional Industrial Economy. *International Journal of Occupational Environment Health* 9 (4), pp.368-377.

Chen, M.S. and Chan, A. (2004) Employee and Union Inputs into Occupational Health and Safety Measures in Chinese Factories. *Social Science & Medicine* 58, pp.1231-1245.

Chen, M.S. and Chan, A. (2010) Occupational Health and Safety in China: The Case of State-Managed Enterprises. *International Journal of Health Services* 40 (1), pp.43-60.

Chen, F. (2009) Union Power in China Source, Operation, and Constraints. *Modern China* 35 (6), pp.662-689.

Choularon, R. (2001) Complex Learning: Organisational Learning from Disasters. *Safety Science* 39, pp.61-70.

CMSA (2007) The Notices for the Adjustment of Chemical Tankers Transport Capacity (in Chinese). *China Maritime* 07 (3), p.22.

Clarke, S. (1999) Perceptions of Organisational Safety: Implications for the Development of Safety Culture. *Journal of Organisational Behaviour* 20, pp. 185-198.

Coffey, A. and Atkinson, P.A. (1996) *Making Sense of Qualitative Data: Complementary Strategies.* Thousand Oaks CA: Sage.

Cohen, S. (1985) *Visions of Social Control: Crime, Punishment and Classification*. Cambridge: Polity.

Cooke, D.L. and Rohleder, T.R. (2006) Learning from Incidents: From Normal Accidents to High Reliability. *System Dynamics Review* 22 (3), pp.213-239.

Cotton, J.L. (1995) Participation's Effect on Performance and Satisfaction: A Reconsideration of Wagner. *Academy of Management Review* 20 (2), pp.276-278.

Couper, A. D., *et al*. (1999) *Voyages of Abuse: Seafarers, Human Rights and International Shipping*. London: Pluto Press.

Cox, S. and Cox, T. (1996) *Safety Systems and People*. Oxford: Butterworth-Heinemann.

Cox, R. and Lippel, K. (2008) Falling through the Legal Cracks: The Pitfalls of Using Workers' Compensation Data as Indicators of Work-related Injuries and Illness. *Policy and Practice in Health and Safety* 06 (2), pp.9-30.

Cullen (1990) *The Public Inquiry into the Piper Alpha Disaster*. London: HMSO.

Dale, J. (2008) Chemical Tankers Pay the Price for 2007 Backlog New Builds Join the Queue. *Lloyd's List*, 15 February 2008.

Christiani, D.C. (1984) Occupational Health in the People's Republic of China. *American Journal of Public Health* 74 (1), pp.58-64.

Denzin, N.K. and Lincoln, Y.S. (1998) *The Landscape of Qualitative Research: Theories and Issues*. Thousand Oaks: Sage Publications.

Denzin, N.K. and Lincoln, Y.S.（2000）The Discipline and Practice of Qualitative Research. In: Denzin, N.K. & Lincoln, Y.S. (eds) *Handbook of Qualitative Research.* 2nd ed. London: Sage Publications Inc., pp.1-28.

Ding, D.Z., Goodall, K. and Warner, M. (2002) The Impact of Economic Reform on the Role of Trade Unions in Chinese Enterprises. *International Journal of Human*

Resource Management 13 (3), pp.431-449.
Donnelly, E. and Neville, L. (2008) *Health and Social Care Knowledge and Skills: Communication and Interpersonal Skills*. Exeter: Reflect Press.
Dorman, P. (2000) If Safety Pays, Why Don't Employers Invest in It? In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 351-366.
Drewry Shipping Consultants (1981) *The Growth of the Chemical Carrier Fleet*. London: Drewry.
Drewry Shipping Consultants (1983) *The Chemical Carrier Trades*. London: Drewry.
Drewry Shipping Consultants (1999) *Chemical Carriers: Facing an Uncertain Future?* London: Drewry.
Drewry Shipping Consultants (2006) *Chemical Carriers: Drewry Shipping Insight*. London: Drewry.
Dwyer, T. (1991) *Life and Death at Work: Industrial Accidents as a Case of Socially Produced Error*. New York: Plenum Press.
Dwyer, T. (2000) A Study on Safety and Health Management at Work: A Multidimensional View from a Developing Country. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 149-174.
Eakin, J.M., Lamm, F., and Limborg, H.J. (2000) International Perspective on the Promotion of Health and Safety in Small Workplaces. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam & New York: Pergamon, pp. 227-247.
EEC (1989) *Council Directive 89/391/EEC on the Introduction of Measures to Encourage Improvements in the Safety and Health of Workers at Work*. Brussels: EU.
Eisenberg, E.M. *et al.* (2005) Communication in Emergency Medicine: Implications for Patient Safety. *Communication Monographs* 72 (4), pp.390-413.
Eisenberger, R. *et al.* (1986) Perceived Organisational Support. *Journal of Applied Psychology* 71, pp.500-507.
Eisenberger, R. *et al.* (2001) Reciprocation of Perceived Organisational Support. *Journal of Applied Psychology* 86 (1), p.42-51.
Ellis, N., Bloor, M., and Sampson, H. (2010) Patterns of Seafarer Injuries. *Maritime Policy and Management* 37 (2), pp.121-128.
Eraut, M. *et al.* (1998) Learning from Other People at Work. In: Coffield, F. (ed.) *Learning at Work*. Bristol: Policy Press.
ExxonMobil (2007) *Historic Investment in China* [Online]. Available at: http://www.exxonmobil.com/Corporate/news_features_20070601_journey.aspx [Accessed: 18 October 2008].
Fang, T. (1999) *Chinese Business Negotiating Style*. London: Sage Publications.
Fang, D.P., Xie, F., Huang, X.Y. and Li, H. (2004) Factor Analysis-based Studies on Construction Workplace Safety Management in China. *International Journal of Project Management* 22 (1), pp.43-49.
Farh, J, and Cheng, B (2000) A Cultural Analysis of Paternalistic Leadership in Chinese Organisations. In: Li, J., Tsui, A. and Weldon, E. (eds.) *Management and Organizations in the Chinese Context*. London: MacMillan, pp. 84-127.
Ferris, D.L, *et al.* (2009) Organisational Supports and Organisational Deviance: The mediating Role of Organisation-based Self-esteem. *Organizational behaviour and Human decision Process* 108, pp.279-286.
Fisher, D. (1993) *Communication in Organisations*. 2nd ed. St. Paul: West Publishing Company.
Frank, A.D. and Brownell, J. (1989) *Organizational Communication and Behaviour: Communicating to Improve Performance*. Holt, Rinehart, and Winston publications.

Frick, K., *et al.* (2000) Systematic Occupational Health and Safety Management – All Introduction to a New Strategy for Occupational Safety, Health and Well-being. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 1-16.

Frick, K. and Wren, J. (2000) Reviewing Occupational Health and Safety Management – Multiple Roots, Diverse Perspectives and Ambiguous Outcomes. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 17-42.

Frick, K. (2004) Organisational Development for Occupational Health and Safety Management. In: Bluff, L. Gunningham, N. and Johnstone, R. (eds) *OHS Regulation for a Changing World of Work*. Sydney: The Federation Press.

Frick, K. and Zwetsloot, G. (2007) From Safety Management to Corporate Citizenship: An Overview of Approaches to Managing Health. In: Ulf, J., Guy, A. and Robin, R. (eds) *Work Health and Management Control*. Stockholm: Thomson Fakta AB, pp.99-36.

Gallagher, C., Underhill, E. and Rimmer, M. (2003) Occupational Safety and Health Management Systems in Australia: Barriers to Success. *Policy and Practice in Health and Safety* 01 (2), pp.67-82.

Gao, X. and Sun, L. (2004) Current Status of the Occupational Health and Safety Countermeasures in Beijing, China. *Industrial Health* 42, pp.116-123.

Garrett, R.K. and Danziger, J.N. (2008) Interruption Management? Instant Messaging and Disruption in the Workplace. *Journal of Computer-mediated Communication* 13, pp.23-42.

Garrison, M. and Bly, M.A. (1997) *Human Relations: Productive Approaches for the Workplace*. Boston: Allyn and Bacon.

Genn, H. (1993) Business Responses to the Regulation of Health and Safety in England. *Law & Policy* 15 (3), pp.219-234.

Gherardi, S. and Nicolini, D. (2000) The Organizational Learning of Safety in Communities of Practice. *Journal of Management Inquiry* 9(1), pp.7-18.

Giddens, A. (1984) *The Constitution of Society. Outline of the Theory of Structuration*. Cambridge: Polity.

Gillie, T. and Broadbent, D. (1989) What Makes Interruptions Disruptive? A Study of Length, Similarity, and Complexity. *Psychological Research* 50 (4), pp.243-250.

Goffman (1961). *Asylums*. Garden City: Anchor Books.

Goffman, E. (1990) *The Presentation of Self in Everyday Life*. London: Penguin.

Gold, R.L. (1997) The Ethnographic Method in Sociology. *Qualitative Inquiry* 3, pp. 388-402.

Goulielmos, A.M. and Goulielmos, M.A. (2005) The Accident of M/V Herald of Free Enterprise: A Failure of the Ship or of the Management? *Disaster Prevention and Management* 14 (4), pp.479-492.

Graham, G.M. *et al.* (2002) Safety Reporting and Aviation Target Levels of Safety. In Johnson, C.W. (ed.) *Investigation and Reporting of Accidents*, pp.68-77. Scotland: University of Glasgow.

Gunningham, N. and Johnstone, R. (1999) *Regulating Workplace Safety: System and Sanctions*. Oxford: Oxford University Press.

Gunningham, N. and Johnstone, R. (2000) The Legal Construction of OHS Management Systems. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam & New York: Pergamon, pp. 125-148.

Gunningham, N. (2007) Designing OSH Standards: Process, Safety Case and Best Practice. *Policy and Practice in Health and Safety* 05 (2), pp.3-24.

Guthrie, R. and Waldeck, E. (2008) The Liability of Corporations, Company Directors and Officers for OSH Breaches: A Review of the Australian Landscape. *Policy and*

Practice in Health and Safety 06 (1), pp.31-54.
Hackman, J.R. and Wageman, R. (1995) Total Quality Management: Empirical, Conceptual, and Practical Issues. *Administrative Science Quarterly* 40 (2), p.309-342.
Haines, F. (1997) *Corporate Regulation: Beyond 'Punish or Persuade'*. Oxford: Oxford University Press.
Hale, A., Baram, M., and Hovden, J. (1998) Perspectives on Safety Management and Change. In: Hale, A. and Baram, M. (eds) *Safety Management: the Challenge of Change*. Kidlington, Oxford: Pergamon, pp.1-22.
Hall, E. T. and Hall. R. M. (1987) *Hidden Dimensions*. New York: Anchor.
Hampel, J. (2006) Different Concepts of Risk – A Challenge for Risk Communication. *International Journal of Medical Microbiology* 296 (2006), S1, pp.5-10.
Haney, W.V. (1986) *Communication and Interpersonal Relations: Text and Cases*. 5th ed. Homewood: Irwin.
Hansen, H. et al., (2008) Major Differences in Rates of Occupational Accidents between Different Nationalities of Seafarers. *International Maritime Health*. 59, p.1-4.
Harley, B. (1999) The Myth of Empowerment: Work Organisation, Hierarchy and Employee Autonomy in Contemporary Australian Workplaces. *Work, Employment and Society* 13 (1), pp.41-66.
Harris, S. (1987) *People and Communication*. Manchester: NCC Publications.
Harrison, R. (2000) *Employee Development*. 2nd ed. London: Institute of Personnel and Development.
Havold, J.I. (2000) Culture in Maritime Safety. *Maritime Policy and Management* 27 (1), pp.79-88.
Havold, J.I., (2005) Safety Culture in a Norwegian Shipping Company. *Journal of Safety Research* 36 (5), pp.448-458.
Held, D. *et al.* (1999) *Global Transformations: Politics, Economics and Culture*. Oxford: Polity.
Hetherington, C., Flin, R. and Mearns, K. (2006) Safety in Shipping: The Human Element. *Journal of Safety Research* 37 (4), pp.401-411.
HMSO (1987) *M.V. Herald of Free Enterprise: Report of Court No.8074 Formal Investigation*. London: HMSO.
Hofmann, D. and Morgeson, F. (1999) Safety-related Behaviour as a Social Exchange. *Journal of Applied Psychology* 84 (2), pp.286-296.
Hofstede, G. (1980) *Cultures Consequences*. Beverly Hills, CA: Sage.
Hofstede, G. (1991) *Cultures and Organisations: Software of the Mind*. Berkshire: McGraw-Hill Book Company.
Homan, R. (1991) *The Ethics of Social Research*. London: Longman.
Hopkins, A. (2000) *Lessons from Longford: The Esso Gas Plant Explosion*. Sydney: CCH Australia Limited.
Houtman I., *et al.* (2005) *Fatigue in the Shipping Industry*. TNO, 2005.
HSE (1997) *Successful Health and Safety Management*. Sudbury: HSE Books.
HSE (2000) Leading Health and Safety at Work. London: HMSO.
Hu, J.H (2008) Shipbuilding Opportunity Derived from the Shift of Chemical Production Base [Online]. *The First Financial Daily*. Available at: http://www.cjk3d.net/viewnews-68054 [Accessed: 18 May 2010].
Huat, T.C. (1989) Confucianism and Nation Building in Singapore. *International Journal of Social Economics* 16 (8), pp.5-16.
Humphreys, S.J. (2007) Health and Safety at Work Act 1974: Is It Too Late to Teach an Old Dog New Tricks? *Policy and Practice in Health and Safety* 05 (1), 2007, pp.19-36.
Hutter, B.M. (1997) *Compliance: Regulation and Environment*. Oxford: Clarendon Press.
Hutter, B.M. (2001) *Regulation and Risk: Occupational Health and Safety on the Railways*.

Oxford: Oxford University Press.
ICS and ISF (2008) *Key Facts: Overview of the International Shipping Industry* [Online]. Available at: http://www.marisec.org/shippingfacts/keyfacts/ [Accessed: 5 April 2009].
IMO (2002a) *World Maritime Day 2002: IMO-Safer Shipping Demands a Safety Culture* [Online]. Available at: http://www.imo.org/includes/blastDataOnly.asp/data_id%3D5673/8133.pdf [Accessed: 26 January 2008].
IMO (2002b) *International Safety Management Code.* London: International Maritime Organisation.
IMO (2005) *Role of the Human Element: Assessment of the Impact and Effectiveness of Implementation of the ISM Code*. London: IMO.
IMO (2007) *Guidelines for the Operational Implementation of the International Safety Management (ISM) Code by Companies*. London: IMO.
IMO (2008a) *Carriage of Chemicals by Ship* [Online]. Available at: http://www.imo.org/ [Accessed: 25 June 2008].
IMO (2008) *Guidance on Near-miss Reporting*. London: International Maritime Organisation.
ISF (2000) *Safety Culture*. London: International Shipping Federation (Special Issue) [Online]. Available at: http://www. http://www.marisec.org/resources/Safety%20Culture%20Leaflet.pdf [Accessed: 20 March 2008].
Jablin, F.M. and Putnam, L. (2001) *The New Handbook of Organisational Communication: Advances in Theory, Research and Methods*. London: Sage.
Johnson, J.V. and Hall, E.M. (1988) Job Strain, Work Place Social Support, and Cardiovascular Disease: A Cross-sectional Study of a Random Sample of the Swedish Working Population. *American Journal of Public Health* 78 (10), pp.1336-1342.
Johnson, J.V. and Hall, E.M. (1994) Social Support in the Work Environment and Cardiovascular Disease. In: Shumaker, S.A. and Czajkowski, S.M. (eds) *Social Support and Cardiovascular Disease.* New York: Plenum Press, pp.145-167.
Johnson, J.V., Hall, E.M. and Theorell, T. (1989) Combined Effects of Job Strain and Social Isolation on Cardiovascular Disease Morbidity and Mortality in a Random Sample of the Swedish Male Working Population. *Scandinavian Journal of Work, Environment and Health* 15, pp.271-279.
Jones, E. *et al.* (2004) Organisational Communication: Challenges for the New Century. *Journal of Communication* December, 2004, pp.722-750.
Kahveci, E. and Sampson, H. (2001) Findings from the Shipboard Based Study of Mixed Nationality Crew. In: *SIRC Symposium*. Cardiff University, pp.39-60.
Kahveci, E. and Nichols, T. (2006) *The Other Car Workers: Work, Organisation and Technology in the Maritime Car Carrier Industry*. New York: Palgrave Macmillan.
Kamp, A. (2009) Bridging Collective and Individual Approaches to Occupational Safety and Health: What Promises Does Workplace Health Promotion Hold? *Policy and Practice in Health and Safety* 07 (1), pp.85-102.
Kamp, A. and Blansch, K. (2000) Integrating Management of OHS and the Environment – Participation, Prevention and Control. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam & New York: Pergamon, pp. 413-436.
Karageorgiou, A. *et al.* (2000) Risk Assessment in Four Member States of the European Union. In: Frick, K. *et al.* (eds). *Systematic Occupational Health and Safety Management*. Amsterdam & New York: Pergamon, pp. 251-284.
Karasek, R. (1979) Job Demands, Job Decision Latitude, and Mental Striain: Implications for Job Redesign. *Administrative Science Quarterly* 24, pp.285-311.

Kearney, R.C. and Hays, S.W. (1994) Labour-Management Relations and Participative Decision Making: Toward a New Paradigm. *Public Administration Review* 54 (1), pp.44-51.
Kim, S. (2002) Participative Management and Job Satisfaction: Lessons for Management Leadership. *Public Administration Review* 62 (2), pp.231-241.
Kipnis, A.B. (2008) Audit Cultures: Neoliberal Governmentality, Socialist Legacy, or Technologies of Governing? *American Ethnologist* 35 (2), pp.275-289.
Kitada, M. (2010) *Women Seafarers and Their Identities*. PhD Thesis, Cardiff University.
Klauss, R. and Bass, B.M. (1982) *Interpersonal Communication in Organisation.* New York: Academic Press.
Kuhn, A.M and Youngberg, B.J. (2002) The Need for Risk Management to Evolve to Assure a Culture of Safety. *Quality and Safety in Health Care* 11 (2), pp.158 – 169.
Lafaytte De Mente, B. (1995) *China's Cultural Code Words*. NTC Publishing Group.
Lam, S.S., Chen, X.P. and Schaubroeck, J. (2002) Participative Decision Making and Employee Performance in Different Cultures: The Moderating Effects of Allocentrism/Idiocentrism and Efficacy. *The Academy of Management Journal* 45 (5), pp.905-914.
Lan, P. (1999) Management in the Chinese Construction Industry. In: Warner, M. (ed.) *China's Managerial Revolution*. London: Frank Cass, pp.94-118.
Larsson, T. (2000) The Diffusion of Employer Responsibility. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam & New York: Pergamon, pp. 199-226.
Leiss, W. (2004) Effective Risk Communication Practice. *Toxicology Letters* 149 (2004), pp.399-404.
Leonard, M., Graham, S., and Bonacum, D. (2004) The Human Factor: The Critical Importance of Effective Teamwork and Communication in Providing Safe Care. *Quality Safety Health Care* pp.185-190.
Leung, J.C.B. (2003) Social Security Reforms in China: Issues and Prospects. *International Journal of Social Welfare* 12, pp.73-85.
Levenstein, C. and Tuminaro, D.J. (1997) The Political Economy of Occupational Disease. In: Levenstein, C. and Wooding, J. (eds) *Work, Health, and Environment*. New York and London: The Guilford Press, pp.3-19.
Lindberg, A.K., Hansson, S.O. and Rollenhagen, C. (2010) Learning from Accidents - What More Do We Need to Know? *Safety Science* 48, pp.714-721.
Lindoe, P.H. (2007) Safe Offshore Workers and Unsafe Fishermen – A System Failure? *Policy and Practice in Health and Safety* 5 (2), pp.25-39.
Lingard, L. *et al.* (2004) Communication in the Operating Room: An Observational Classification of Recurrent Types and Effects. *Quality and Safety in Health Care* 13, pp.330-334.
Littlejohn, S.W. and Foss, K.A. (2008) *Theories of Human Communication*. 9th ed. Thomson Learning Incorporation.
Liu, T. *et al.* (2005) Industrial Accidents: Challenges for China's Economic and Social Development. *Safety Science* 43, pp.503-522.
Lloyd, C. and James, S. (2008) Too Much Pressure? Retailer Power and Occupational Health and Safety in the Food Processing Industry. *Work, Employment and Society*, 22 (4), pp.713-730.
Lu, Y. (1991) *A Longitudinal Study of Chinese Managerial Behaviour: An Inside View of Decision-making under the Economic Reform*. PhD Thesis, University of Aston, Birmingham.
Magee, J.C. and Galinsky, A.D. (2008) Social Hierarchy: The Self-Reinforcing Nature of Power and Status. *The Academy of Management Annals* vol. (2), pp.351-398.

Mark, G., Gonzalez, V.M. and Harris, J. (2005) *No Task left behind? Examining the Nature of Fragmented* [Online]. Available at: http://delivery.acm.org/10.1145/1060000/1055017/p321-mark.pdf?ip=131.251.133.28&CFID=37180866&CFTOKEN=77080869&__acm__=1311777598_7dbe0584685204d8e0e13c39d10cd7a9 [Accessed: 15 June 2011].

Matlay, H. (2000) Organisational Learning in Small Learning Organisations: An Empirical Overview. *Education + Training* 42 (4/5), pp.202-210.

May, T. (2002) *Qualitative Research in Action.* London: Sage.

Mearns, K.J. and Reader, T. (2008) Organisational Support and Safety Outcomes: An Un-investigated Relationship? *Safety Science* 46, pp.388-397.

Michael, J.H. *et al.* (2006) Production Supervisor Impacts on Subordinates' Safety Outcomes: An Investigation of Leader-member Exchange and Safety Communication. *Journal of Safety Research* 37, pp.469-477.

Miller, K. (1999) *Organizational Communication: Approaches and Processes.* 2nd ed. Wadsworth Publishing Company.

Mouritsen, J. and Larsen, H.T. (2005) The 2nd Wave of Knowledge Management: The Management Control of Knowledge Resources through Intellectual Capital Information. *Management Accounting Research* 16, pp.371-394.

NBSC (2008) *GDP Increase at an Average Rate of 9.8% in Our Country* (in Chinese) [Online]. Available at: http://www.stats.gov.cn/ [Accessed: 2 April 2009].

Needleman, C. (2000) OSHA at the Crossroads: Conflicting Frameworks for Regulating OHS in the United States. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 67-86.

Neher, W.W. (1997) *Organisational Communication: Challenges of Change, Diversity, and Continuity*. MA: Allyn and Bacon.

Nichols, T. and Armstrong, P. (1973) *Safety or Profit: Industrial Accidents and the Conventional Wisdom*. Bristol: Falling Wall Press.

Nichols, T. (1997) *The Sociology of Industrial Injury*. London: Mansell.

Nichols, T. and Tucker, E. (2000) OHS Management Systems in the United Kingdom and Ontario, Canada: A Political Economy Perspective. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam & New York: Pergamon, pp. 285-309.

Nielsen, D. and Roberts, S. (1999) Fatalities among the World's Merchant Seafarers (1990-1994) *Marine Policy* 23 (1), pp.71-80.

Nielsen, K. (2000) Organisation Theories Implicit in various Approaches to OHS Management. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 99-124.

Nytro, K. and Saksvik, P.O. and Torvatn, H. (1998) Organisational Prerequisites for the Implementation of Systematic Health, Environment and Safety Work in Enterprises. *Safety Science* 30 (3), pp.297-307.

O'Brien, R. *et al.* (2000) *Contesting Global Governance: Multilateral Economic Institutions and Global Social Movements.* Cambridge: Cambridge University Press.

OCIMF (2010) *SIRE Introduction* [online]. Available at: http://www.ocimf.com/SIRE/Introduction [Accessed: 3 July 2010].

Oliver, P. (2003) *The Student's Guide to Research.* Buckingham: Open University Press.

Oltedal, H. and Wadsworth, E. (2010) Risk Perception in the Norwegian Shipping Industry and Identification of Influencing Factors. *Maritime Policy and Management* 37 (6), pp.601-623.

Oltedal, H.A. and McArthur, D.P. (2011) Reporting Practices in Merchant Shipping, and the Identification of Influencing Factors. *Safety Science* 49, pp.331-338.

Osca, A., Urien, B., and Martinez-Perez, N. (2005) Organisational Support and Group

Efficacy: A Longitudinal Study of Main and Buffer Effects. *Journal of Managerial Psychology* 20 (3/4), pp.292-311.
Pace, R.W. and Faules, D.F. (1994) *Organisational Communication*. 3rd ed. NJ: Prentice Hall.
Panopoulos, G.D. and Booth, R.T. (2007) An Analysis of the Business Case for Safety: The Costs of Safety-related Failures and the Costs of Their Prevention. *Policy and Practice in Health and Safety* 05 (1), pp.61-74.
Parker, A.W., *et al*.(1997) *A Survey of the Health, Stress and Fatigue of Australian Seafarers*. Canberra: AMSA.
Parsons, A.R. Kautt, P. and Coupe, T. (2011) Effective Policing: Management Influence and the Commitment of Senior Police Personnel. *Policing & Society* 21 (1), pp.1-26.
Patton, M. Q. (2002) *Qualitative Evaluation and Research Methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.
Peiro, J.M. and Melia, J.L. (2003) Formal and Informal Interpersonal Power in Organisations: Testing a Bifactorial Model of Power in Role-sets. *Applied Psychology: An International Review* 52 (1), pp.14-35.
Perrow, C. (1999) *Normal Accidents: Living with High-Risk Technologies*, 2nd ed. New Jersey: Princeton University Press.
Pfeffer, J. (1992) *Managing with Power: Politics and Influence in Organisations*. Harvard Business School Press.
Podsakoff, P.M. *et al.* (2006) Relationships between Leader Reward and Punishment Behaviour and Subordinate Attitudes, Perceptions, and Behaviours: A Meta-analytic Review of Existing and New Research. *Organisational Behaviour and Human Decision Processes* 99 (2), pp.113-142.
Popma, J.R. (2009) Does Worker Participation Improve Health and Safety? Findings from the Netherlands. *Policy and Practice in Health and Safety* 07 (1), pp.33-52.
Porter, R. (1996) Politics, Culture and Decision Making in China. In: Brown, D.H. and Porter, R. (eds) *Management Issues in China: Volume I – Domestic Enterprises*. London: Routledge, pp.85-105.
Pringle, T.E. (2003) The Absence of Rigor and the Failure of Implementation: Occupational Health and Safety in China. *International Journal of Occupational Environment Health* 9 (4), pp.309-316.
Probst, T. and Brubaker, T. (2001) The Effects of Job Insecurity on Employee Safety Outcomes: Cross-sectional and Longitudinal Explorations. *Journal of Occupational Health and Psychology* 6(2), pp.139-160.
Psarros, G, Skjong, R. and Eide, M.S. (2010) Under-reporting of Maritime Accident. *Accident Analysis and Prevention* 42, pp. 619-625.
Qiao, J. (2010) Between the State and Market Multiple Role of the Chinese Trade Unions from the Perspectives of Shop Stewards. *Employee Relations* 32 (1), pp.28-41.
Quinlan, M. (1999) The Implications of Labour Market Restructuring in Industrialised Societies for Occupational Health and Safety. *Economic and Industrial Democracy* 20, pp.427-460.
Quinlan, M. and Mayhew, C. (2000) Precarious Employment, Work Re-organisation and the Fracturing of OHS Management. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 175-198.
Rajan, R. G. and Zingales, L. (2000) *The Firm as a Dedicated Hierarchy: A Theory of the Origin and Growth of Firms*. NBER Working Paper Series [Online]. Available at: http://www.nber.org/papers/w7546.pdf?new_window=1[Accessed: 28 June 2011].
Reason, J.T. (1997) *Managing the Risks of Organisational Accidents*. Aldershot: Ashgate.
Reason, J.T. (2005) Safety in the Operating Theatre – Part 2: Human Error and Organisational Failure. *Quality in Health Care*, 4, pp.56-61.

Redding, S. and Ng, M. (1982) The Role of Face in the Organisational Perceptions of Chinese Managers. *Organisation Studies* 3 (3), pp.201-219.

Rees, T. (1991). Ethical Issues. In: Allan, G. and Skinner, C. (eds) *Handbook for Research Students in Social Sciences*. London: Falmer Press, pp.140-151.

Regier, W.G. (2007) *In Praise of Flattery*. Lincoln and London: University of Nebraska Press.

Rhoades, L. and Eisenberger, R. (2002) Perceived Organisational Support: A Review of the Literature. *Journal of Applied Psychology* 87 (4), pp.698-714.

Ridder, J.A. (2006) Organisational Communication and Supportive Employees. *Human Resource Management Journal* 14 (3), pp.20-30.

Riggle, R.J., Edmondson, D.R., and Hansen, J.D. (2009) A Meta-analysis of the Relationship between Perceived Organisational Support Job outcomes: 20 Years of Research. *Journal of Business Research* 62, pp.1027-1030.

Robson, L.S. *et al.* (2007) The Effectiveness of Occupational Health and Safety Management System Interventions: A Systematic Review. *Safety Science* 45, pp.329-353.

Rogers, E.M. and Agarwala-Rogers, R. (1976) *Communication in Organisations.* New York: The Free Press.

Saksvik, P.O. and Quinlan, M. (2003) Regulating Systematic Occupational Health and Safety Management: Comparing the Norwegian and Australian Experience. *Industrial Relations* 58, pp.33-56.

Sampson, H. (2003) Transnational Drifters or Hyperspace Dwellers: An Exploration of the Lives of Filipino Seafarers Aboard and Ashore. *Ethnic and Racial Studies*, 26 (2), pp.253-277.

Sampson, H. and Thomas, M. (2003) The Social Isolation of Seafarers: Causes, Effects, and Remedies. *International Maritime Health* 54 (1-4), p.58-67.

Sampson, H. and Wu, B. (2007) Thoughts on Safety: the Views of Chinese Seafarers. In SIRC: *SIRC Symposium Proceedings.* Cardiff: Cardiff University, pp.138-156,

Sampson, H. and Zhao, M.H. (2003) Multilingual Crew: Communication and the Operation of Ships. *World Englishes*, 22 (1), pp.31-43

Schlevogt, K. (2002) *The Art of Chinese Management: Theory, Evidence, and Applications*. Oxford: Oxford University Press.

Schneider, A. *et al*. (1975) *Organizational Communication*. New York and London: McGraw-Hill.

Schwarz, R.M. (1989), Participative Decision Making Comparing Union-management and Management-Designed Incentive Pay Programs. *Group Organisation Management* 14 (1), pp.104-122.

Shaw, A. and Blewett, V. (2000) What Works? The Strategies Which help to Integrate OHS Management within Business Development and the Role of the Outsider. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 457-473.

Shaw, B; Scheufele, D. and Catalano, S. (2007) The Role of Presence Awareness in Organizational Communication: An Exploratory Field Experiment. *Behaviour and Information Technology* 26 (5), pp.377-384.

Shi, X. and Westwood, R.I. (2000) International Business negotiation in the Chinese Context. In: Li, J.T., Tsui, A.S. and Weldon, E. (eds) *Management and Organisations in the Chinese Context*. Palgrave Macmillan, pp.185-221.

Silverman, D. (1993) *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*. London: Sage.

Silverman, D. (2004) *Introduction to Qualitative Research in Qualitative Research: Theory, Method and Practice*. London: Sage.

Silverman, D. (2005) *Doing Qualitative Research*. 2nd ed. London: Sage
Simons, R. (1995) *Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal*. Boston: Harvard Business School Press.
SINOPEC (2008) *About Sinopec* [Online]. Available at: http://www.sinopecgroup.com/gsjs/Pages/default.aspx [Accessed: 14 October 2008].
Sitkin, S.B. (1992) Learning through Failure: The Strategy of Small Losses. *Research in Organisational Behaviour* 14, pp.231-266.
Skoog, M. (2007) Management Control: A Concept in Constant Transformation. In: Ulf, J., Guy, A. and Robin, R. (eds) *Work Health and Management Control*. Stockholm: Thomson Fakta AB, pp.37-54.
Smith, S.R. (1981) The Ideal and Reality: Apprentice-Master Relationship in Seventeenth Century London. *History of Education Quarterly* 21 (4), pp.449-459.
Smith, A., Allen, P. and Wadsworth, E. (2006) *Seafarer Fatigue: The Cardiff Research Programme* [Online]. Cardiff University: Centre for Occupational and Health Psychology. Available at: http://www.seafarersfatigue.com/ [Accessed: 15 June 2011].
Smith A. (2011) *Adequate Crewing and Seafarers' Fatigue: The International Perspective* [Online]. Available at: http://www.itfglobal.org/files/seealsodocs/3193/ITF%20FATIGUE%20REPORT%20final.pdf [Accessed: 1 September 2011].
Spreeuwers, D. *et al.* (2008) Time Trends and Blind Spots: What Employers, Employees and Policy-makers Want to Know about Occupational Diseases, *Policy and Practice in Health and Safety* 06 (1), pp.65-78.
SSA (2003) *Swedish Shipowners' Association: Maritime Safety Policy*. Goteborg: Breakwater Publishing AB.
SSE (2007) *Information Service* [Online]. Available at: http://www.sse.net.cn/ [Accessed: 16 October 2008].
Stopford, M. (1997) *Maritime Economics*. London: Routledge.
Strathern, M. (2000) Introduction: New Accountabilities. In: Strathern, M. (ed.) *Audit Cultures: Anthropological Studies in Accountability, Ethics and the Academy*. London: Routledge, pp.1-19.
Su, Z. (2003) Occupational Health and Safety Legislation and Implementation in China. *International Journal of Occupational Environment Health* 9 (4), pp.302-308.
Sum, N. and Ngai, P. (2005) Globalisation and Paradoxes of Ethical Transnational Production: Code of Conduct in a Chinese Workplace. *Competition & Change* 9 (2), pp.181-200.
Tam, C.M. (2004) Identifying Elements of Poor Construction Safety Management in China. *Safety Science* 42 (7), pp.569-586.
Tang, J. and Ward, A. (2003) *The Changing Face of Chinese Management.* London and New York: Routledge.
Taylor, B. (2003) *Industrial Relations in China*. Cheltenham, Northampton, and Mass: Edward Elgar.
Teare, R., *et al.* (1997) Organisational Teamworking Frameworks: Evidence from the UK and USA-based Firms. *International Journal of Service Industry Management* 8 (3), pp.250-263.
Telleria, K.M., Little, D., and MacBryde, J. (2002) Managing Processes through Teamwork. *Business Process Management* 8(4), pp.338-350.
Thebault, L. (2004) Maritime Safety Culture in Europe. *Managerial Law* 46 (1), pp.1-59.
Torrent-Moreno, M and Mittag, J. (2009) Vehicle-to-Vehicle Communication: Fair Transmit Power Control for Safety-Critical Information. *Transactions on Vehicular Technology* 58 (7), pp.3684-3703.
Tsui, A.S., Farh, J.L. and Xin, K.R. (2000) Guanxi in the Chinese Context. In: Li, J.T., Tsui,

A.S. and Weldon, E. (eds) *Management and Organisations in the Chinese Context*. Palgrave Macmillan, pp.225-244.

Tucker, A.L., Edmondson, A.C. and Spear, S. (2002) When Problem Solving Prevents Organisational Learning. *Journal of Organisational Change Management* 15 (2), pp.122-137.

Turner, B.A and Pidgeon, N.F. (1997) *Man-Made Disasters*. 2nd ed. Boston: Butterworth-Heinemann.

UNCTAD (2007) *Review of Maritime Transport 2007*. New York and Geneva: United Nations [Online]. Available at: http://www.unctad.org/en/docs/rmt2007_en.pdf [Accessed: 28 January 2008]

Valentine, S., Greller, M.M. and Richtermeyer, S.B. (2006) Employee Job Response as a Function of Ethical Context and Perceived Organisation Support. *Journal of Business Research* 59, pp.582-588.

Valkonen, H. (2001). The Culture of Safety at Sea. *IMO News* 4, pp.10-13.

Veiga, J.P.A.L. (2001) *A Study of the Implementation of STCW 95 in the Context of a Safety Culture in Shipping*. PhD Thesis, Cardiff University.

Vuuren, M.V., Jong, M. D.T. and Seydel, E.R. (2007) Direct and Indirect Effects of Supervisor Communication on Organisational Commitment. *Corporate Communications: An International Journal* 12 (2), pp.116-128.

Wadsworth, E. and Smith, A.P. (2009) Safety Culture, Advice and Performance. *Policy and Practice in Health and Safety* 07(1), pp.5-32.

Wagner, J.A. (1994) Participation's Effect on Performance and Satisfaction: A Reconsideration of Research Evidence. *Academy of Management Review* 19 (2), pp.312-330.

Walker, A., Bridges, E., and Chan, B. (1996) Wisdom Gained, Wisdom Given: Instituting PBL in a Chinese Culture. *Journal of Educational Administration* 34 (5), pp.12-31.

Walters, D. and Frick, K. (2000) Worker Participation and the Management of Occupational Health and Safety: Reinforcing or Conflicting Strategies? In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 43-66.

Walters, D and Jensen, P.L. (2000) The Discourses and Purposes behind the Development of the EU Framework Directive 89/391. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 87-98.

Walters D. (2004) Workplace Arrangements for Worker Participation in OHS. In: Bluff, L., and Gunningham, M. and Johnstone, R. (eds) *OHS Regulation for a Changing World of Work*. Sydney: Federation Press.

Walters, D. (2005) International Developments and Their Influence on Occupational Health and Safety in Advanced Market Economies. In: Peterson, C.L. and Mayhew, C. (eds) *Occupational Health and Safety*. New York: Baywood Publishing Company, pp.13-30.

Walters, D. (2006) The Efficacy of Strategies for Chemical Risk Management in Small Enterprises in Europe: Evidence for Success? *Policy and Practice in Health and Safety* 4 (1), pp.81-116.

Walters, D. and Grodzki, K. (2006) *Beyond Limits? Dealing with Chemical Risks at Work in Europe*. Oxford: Elsevier

Walters, D. (2007) Chemical Risk Management. In: *Seafarers' International Research Centre Symposium 2007*. Cardiff: SIRC, pp.59-80.

Walters D. and Nichols, T. (2007) *Worker Representation and Workplace Health and Safety*. Palgrave Macmillan.

Walters, D. Bhattacharya, S. and Xue, C.H. (2011) Managing Health and Safety through the Supply Chain: A Case Study of Supply Chain Influence in the Shipping Industry. In:

SIRC Symposium 2011, Cardiff University, pp.66-88.
Walton, R.E. (2003) From Control to Commitment in the Workplace. In Handel, M. J. ed. *The Sociology of Organizations: Classic, Contemporary, and Critical Readings*. California: Sage Publications, pp.114-122.
Wan, H. (1988) *British and Chinese Shipping Companies: a Comparative Study of Organisation and Management*. PhD Thesis, Cardiff University.
Warren, C.A.B. (2001) Qualitative Interviewing. In: Gubrium, J.F. & Holstein J.A. (eds) *Handbook of Interview Research Context and Method*. London: Sage Publications, pp.83-102.
Wayne, S.J. and Liden, R. (1995) Effects of Impression Management on Performance Ratings: A Longitudinal Study. *Academy of Management Journal* 38 (1), pp.232-260.
WCC (2011) *Inmarsat Service Pricing* [Online]. Available at: http://www.wcclp.com/index.asp?pgid=85 [Accessed: 8 July 2011].
Webb, J. (1995) Quality Management and Management of Quality. In: Wilkinson, A. and Willmott, H. (eds) *Making Quality Critical: New Perspectives on Organisational Change*. London: Routledge.
Whittaker, S. *et al.* (1994) Informal Workplace Communication: What Is It Like and How Might We Support It? *Human Factors in Computing Systems* April 1994, pp.131-137.
Wiener E.L. and Nagel, D.C. (1988) *Human Factors in Aviation*. New York: Academic Press.
Wikipedia (2010) *Telephone* [Online]. Available at: http://en.wikipedia.org/wiki/Telephone#Usage [Accessed: 8 October 2010].
Wilkinson, T. (1989) *The communications challenge: Personnel and PR perspectives*. London: Institute of Personnel Management.
Winter, G. (2000). A Comparative Discussion of the Notion of Validity in Qualitative and Quantitative Research [Online]. *The Qualitative Report*. 4(3/4). Available at: http://www.nova.edu/ssss/QR/QR4-3/winter.html [Accessed: 12 July 2012].
Wokutch, R.E. and VanSandt, C.V. (2000) OHS Management in the United States and Japan: The DuPont and the Toyota Models. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 367-387.
Woolfson, C. and Calite, D. (2008) Working Environment in the New EU Member State of Lithuania: Examining a 'Worse Case' Example. *Policy and Practice in Health and Safety* 06 (1), pp.3-30.
Wright, C. (1994) A Fallible Safety System: Institutionalised Irrationality in the Offshore Oil and Gas Industry. *Sociological Review*, 42 (1), pp.79-103.
Wu, B. (2004) Participation in the Global Labour Market: Experience and Responses of Chinese Seafarers. *Maritime Policy and Management* 31(1), pp.69-72.
Wu, B. *et al.* (2006) Emergency of New Professionalism among Chinese Seafarers: Empirical Evidence and Policy Implications. *Maritime Policy & Management* 33 (1), pp.35-48.
Yang, G. and Zheng, B. (1989) Empirical Test of a Neo-Confucians Hypothesis. In: Jiang, Y. and Min, J. Ed(s). *Ancient Management Thoughts and Chinese Management*. Beijing: Economic Management Press, pp.34-52.
Yang, M. (1994) *Gifts, Favours, and Banquets: The Art of Social Relationships in China*. New York: Cornell University Press.
Yuan, X.L. and Fei J.Y. (2008) The Present Situation and Expectation of Crew Working on Chemical Tankers in China. In: Shenzhen International Maritime Forum Organising Committee. *Seafarers and Development: Collection of Theses.* 17-18 April, 2008. Beijin: People's Communications Publishing House, pp.392-399.
Zapalska, A.M. and Edwards, W. (2001) Chinese Entrepreneurship in a Cultural and

Economic Perspective. *Journal of Small Business Management* 39 (3), pp.286-292.
Zhang, W.B. (2000) *On Adam Smith and Confucius: The Theory of Moral Sentiments and the Analects*. New York: Nova Science Publishers Inc.
Zhang, X.L. (2005) Market Demand and Forecast of Chemical Tankers (in Chinese). *China Ship Survey* 05 (1), pp.26-28.
Zhao, S.S. (1997) Chinese Intellectuals' Quest for National Greatness and Nationalistic Writing in the 1990s. *The China Quarterly* 152, pp.725-745.
Zhi, S., Sheng, W. and Levine, S.P. (2000) National Occupational Health Service Policies and Programs for Workers in Small-Scale Industries in China. *American Industrial Hygiene Association Journal* 61 (6), pp.842-849.
Zigon, J. (1997) Team Performance Measurement: A Process for Creating Team Performance Standards. *Compensation and Benefits Review* 29 (1), pp.38-47.
Zobal, C. (1998) The Ideal Team Compensation – An Overview. *Team Performance Management* 4 (5), pp.235-249.
Zwetsloot, G. (1995) Improving Cleaner Production by Integration into the Management of Quality, Environment and Working Conditions. *Journal of Cleaner Production* 3 (1-2), pp.61-66.
Zwetsloot, G. (2000) Developments and Debates on OHSM System Standardisation and Certification. In: Frick, K. *et al.* (eds) *Systematic Occupational Health and Safety Management*. Amsterdam and New York: Pergamon, pp. 391-412.

APPENDICES

Appendix 1: Participant Information Sheet

Participant Information Sheet
(English Version)

Research Aims

This project is conducted for the purpose of fulfilment of my PhD in Cardiff University in the UK. It aims to explore the role of shore-ship communication in influencing OHSM in the Chinese chemical shipping sector. It was proposed in consideration of the particularity of management-employee communication in the shipping industry as opposed to that in traditional land-based industries. Although the development of modern communication technology has significantly facilitated communication between shore and ship, the effectiveness of such communication awaits further investigation in the presence of various social, economical and cultural factors. The findings of this study will contribute to a comprehensive understanding of shore-ship communication from a wider sociological perspective.

Research Methods

The study mainly uses semi-structured qualitative interviews with shore management ship's crew, and there was no need for an interviewee to make any preparations.

Researcher's Promises

The study is approved by the Cardiff university research ethics committee. The study shall by no means have any negative affect on any individual or organisation. As a researcher, I hereby make the following promises to my interviewees.

1. This study is entirely for academic purposes, and has nothing to do with any official sensitive topics such as political, economical, and trade issues.
2. All the interviewees involved are anonymised and their talks are entirely confidential.
3. The response to the interview questions is entirely at an interviewee's discretion.
4. For convenience of my data collection and handling, I request that for interviews be recorded. I promise that all the recordings will be kept confidential and be limited to my own use. They will by no means be exposed to any other person.

Researcher's Contact Information

My Name is Conghua Xue, and I am currently studying at the Seafarers International Research Centre at Cardiff University in the UK. I am also a registered maritime lecturer at the NT Shipping College in China. If you have any inquiries about my research, please contact me at:

Mobile: + 44 7570891xxx (UK); +86 13773678xxx (China)
Email: Xuech@cardiff.ac.uk

Appendix 2: Interview Guide – Shore Management

Interviewee's Biographical Information

Position/Age/Education/Sea Experience/Contract/Employment History

Importance of Communication

The role of technology-mediated communication and face-to-face communication in the shipping context

The effect of physical distance on shore-ship communication

Channels of understanding crew's thoughts and shipboard OHSM conditions

Its role in improving OHSM

Effectiveness of Shore to Ship Communication

Technology-mediated Communication

Purposes of communication

Delivery of organisational support

Management and supervision of shipboard OHSM-related activities

Management's attitude towards crew's decision making/crew's authority

The effect on shipboard OHSM practice/Examples

Ship Visit Communication

Occasions of ship visit

Major concerns in communication between visitors and crew

Safety Inspection/Outcomes/Its affect on crew/Its affect on OHSM

The role of visitors in improving OHSM

Effectiveness of Ship to Shore upward Communication

Safety-related Problem Reporting

Management's attitude towards crew's safety reporting

Factors affecting crew's safety reporting to shore management

Consequences/Feedback/Examples

Making Suggestions

Management's attitude towards crew's safety suggestions

Crew’s involvement and participation in safety policy making process

Factors affecting crew’s suggestion reporting

The role of a shipboard trade union unit (group) in making OHSM related suggestions

The Impact of Employment Modes

Different employment modes and their impact on crew’s safety reporting or safety suggestions

Explanation with examples

In-Closing

The importance of chemical management onboard/Risks to crew’s OHS

The role of shore management in chemical management

The effectiveness of OHSM onboard

Appendix 3: Interview Guide - Crew

Interviewee's Biographical Information

Position/Age/Education/Sea Experience/Contract/Employment History

Importance of Communication

The role of technology-mediated communication and face-to-face communication in the shipping context

The effect of physical distance on shore-ship communication

Effectiveness of Shore to Ship Communication

Technology-mediated Communication

Purposes of communication

- Delivery of organisational support
- Management and supervision of shipboard OHSM-related activities

Crew's attitude on the effectiveness of such communications

- Problems and difficulties/reasons
- The independence of crew's decision making/authority
- The effect on shipboard OHSM practice/Examples

Ship Visit Communication

Occasions of ship visit

Major concerns of the shore management during a ship visit

- Safety Inspection/Outcomes/Its affect on crew/Its affect on OHSM
- The role of visitors in improving OHSM

Effectiveness of Ship to Shore upward Communication

Safety-related Problem Reporting

Crew's attitude towards safety reporting

Factors affecting crew's safety reporting to shore management

Consequences/Feedback/Examples

Making Suggestions

Crew's attitude towards safety suggestions

Crew’s involvement and participation in safety policy making process

Factors affecting crew’s suggestion reporting

The role of a shipboard trade union unit (group) in making OHSM related suggestions

The Impact of Employment Modes

Different employment modes and their impact on crew’s safety reporting or safety suggestions

Explanation with examples

In-Closing

The importance of chemical management onboard/Risks to crew’s OHS

The role of shore management in chemical management

The effectiveness of OHSM onboard

Appendix 4: Shore Management Interviewees List

Management Interviewees in C1

Rank	Age Range	Education	Years of Sea Experience	Final Sea Qualification	Years in Office
Vice General Manager (Safety)	51-55	University	18	Captain	10
Marine Affairs Manager	46-50	University	14	Captain	8
Marine Affairs Superintendent	51-55	College	20	Captain	7
Marine Engineering Manager	46-50	University	17	Chief Engineer	4
Marine Engineering Superintendent	46-50	University	20	Chief Engineer	6
Quality and Safety Superintendent	41-45	University	12	Captain	8
Crewing Vice Manager	31-35	University	4	2nd Officer	6

Management Interviewees in C2

Rank	Age Range	Education	Years of Sea Experience	Final Sea Qualification	Years in Office
Vice General Manager (Safety)	46-50	University	16	Captain	5
Safety and Quality Manager	41-45	University	12	Captain	5
Marine Affairs Manager	41-45	University	18	Captain	4
Marine Affairs Superintendent	36-40	University	10	Captain	5
Marine Engineering Manager	46-50	University	20	Chief Engineer	4
Marine Engineering Superintendent	46-50	University	25	Chief Engineer	1
Crewing Vice Manager	35-40	University	10	Captain	4

Appendix 5: Crew Interviewees List

Interviewees on S1 C1

Rank	Age Range	Education	Years of Sea Experience	Years Or Months in C1
Captain	41-45	University	17	17 yrs
Deck Department				
Chief Officer	31-35	University	8	8 yrs
2nd Officer	26-30	College	7	7 yrs
3rd Officer	26-30	College	3	3 yrs
Bosun	36-40	High School	5	5 yrs
Rating	31-35	High School	4	4 yrs
Engine Room Department				
Chief Engineer	36-40	Secondary School	16	16 yrs
2nd Engineer	36-40	College	13	13 yrs
3rd Engineer	31-35	College	10	10 yrs
Chief Motorman	36-40	High School	7	7 yrs
Motorman	21-25	College	2	2 yrs

Interviewees on S2 C1

Rank	Age Range	Education	Years of Sea Experience	Years or Months in C1
Captain	36-40	University	13	7 yrs
Deck Department				
Chief Officer	41-45	College	20	5 yrs
2nd Officer	41-45	College	12	8 yrs
Bosun	36-40	Secondary School	10	5 yrs
Rating -1	36-40	High School	8	8 yrs
Rating -2	26-30	College	3	3 yrs
Engine Room Department				
Chief Engineer	46-50	College	20	8 yrs
2nd Engineer	35-40	University	10	10 yrs
3rd Engineer	26-30	College	4	4 yrs
Chief Motorman	36-40	High School	8	8 yrs
Motorman	21-25	College	2	2 yrs

Interviewees on S3 C2

Rank	Age Range	Education	Years of Sea Experience	Years or Months in C2
Captain	36-40	University	13	5 yrs
Deck Department				
Chief Officer	31-35	University	10	2 yrs
2nd Officer	26-30	College	6	2 ms
3rd Officer	31-35	Secondary School	6	3 yrs
Bosun	46-50	High School	20	10 ms
Rating	26-30	High School	1	6 ms
Engine Room Department				
Chief Engineer	56-60	Secondary School	30	3 yrs
2nd Engineer	51-55	College	20	7 ms
3rd Engineer	31-35	College	5	6 ms
4th Engineer	36-40	Secondary School	2	2 yrs
Chief Motorman	41-45	High School	8	4 ms
Motorman	26-30	High School	2	4 ms
Pumpman	36-40	High School	10	6 ms

Interviewees on S4 C2

Rank	Age Range	Education	Years of Sea Experience	Years or Months in C2
Captain	46-50	University	25	2 yrs
Deck Department				
Chief Officer	36-40	College	14	2 ms
2nd Officer	26-30	College	6	3 ms
3rd Officer	26-30	Secondary School	4	2 yrs
Bosun	36-40	High School	4	10 ms
Rating -1	36-40	High School	4	2 ms
Rating -2	26-30	High School	2	3 ms
Engine Room Department				
Chief Engineer	41-45	College	20	8 ms
3rd Engineer	26-30	College	4	4 yrs
4th Engineer	41-45	Secondary School	4	4 yrs
Chief Motorman	31-35	High School	6	6 ms
Motorman	21-25	College	2	8 ms