

工學碩士 學位論文

海上運送 危險管理  
研究

A Study on the Risk Management of Container  
Transport at Sea

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# A Study on the Risk Management of Container Transport at Sea

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Graduate School of Korea Maritime University

## Abstract

This paper aimed to select the appropriate risk management techniques on the risks of container transport at sea based on risk and risk management theory.

Risks are defined as uncertainty concerning the occurrence of a loss. There are several kinds of risks, but they are mainly divided into pure risks and speculative risks. Speculative risks are those risks where there is a chance for gain as well as loss, but pure risks have no chance of gain but only the possibility of loss.

Risk management can be defined as a systematic process for the identification and evaluation of pure loss exposure faced by an organization or individual, and for the selection and administration of the most appropriate techniques for treating such exposures.

Risk management places greater emphasis on the identification and analysis of pure risks. The major types of pure risks are associated with personal risks, property risks, and liability risks.

In order to attain the preceding goals and objectives, the risk manager must take certain steps in the risk management process as follows.

Identifying potential losses

Evaluating potential losses

Selecting the appropriate techniques or combination of techniques for treating loss exposures

Risks of container at sea transport are widely divided into three categories, such as, risk of container itself, risk of container cargo and liability to third party. This paper places emphasis on the risks of container transport at sea as well as limits its scope from container terminal to container terminal.

In this study, container accidents were analysed by Heinrich's Domino theory centering around case study through the Damage Report of Surveyor on container accidents at sea transport carried out.

In conclusion, according to Damage Report, most cases are wet damages and burning etc., which are usually covered by insurance less customary deductible. So in this papers studied about insurance management for container transport at sea. Therefore we have to make a constant effort to prevent such loss as a pre-loss control.

1

1

, 가 .  
가  
가

,  
가 가 .

가 .

(cont ainerization)

, 가 , 가



가

(identification) , 가(evaluation), (control)

2

가

5

1

, 2

. 3

. 4

가

. 5

,

.

2

1

1.

가, 가 , ,

(risk) “ ” 1),

(loss), (peril), (hazard)

가 . (loss)

(undesired) (unintentional) 가

(peril) ( )

가 (hazard) . (hazard)

(physical hazard) (moral hazard),

(morale hazard) . (physical hazard)

가 (moral

hazard) 가 가 ,

( ) . (morale hazard)

가 가

---

1) George E. Rejda, *Principles of Risk Management and Insurance*, Harper Collins Publishers, 1992, p. 5.

2.

가

1)

2) (pure risk)

(speculative risk)

가

(A.H

Mowbray)

가

가

.2)

(personal risks),

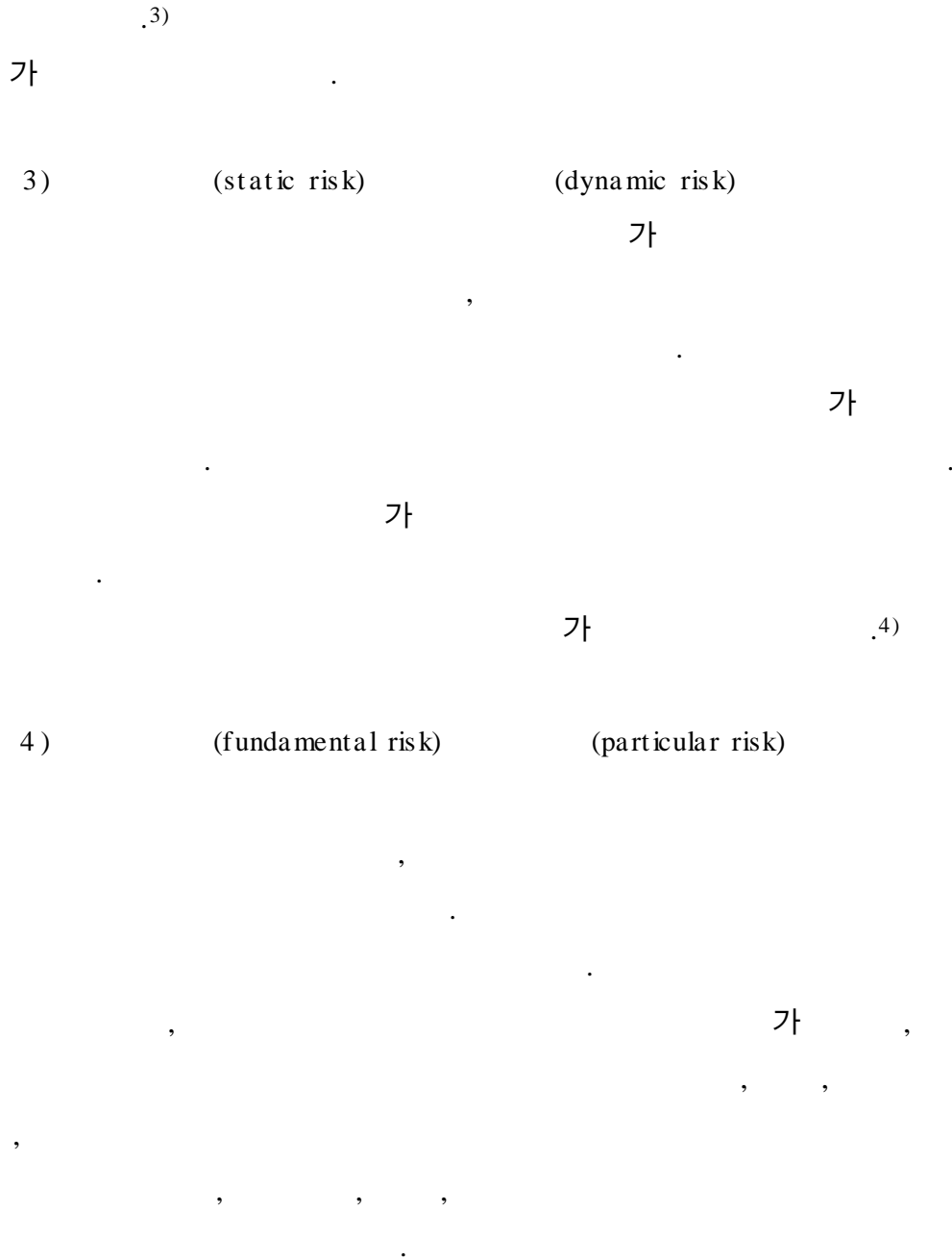
(property risks)

(liability risks)

가

가

2) , 『 』, , 1995, pp. 110 111.




---

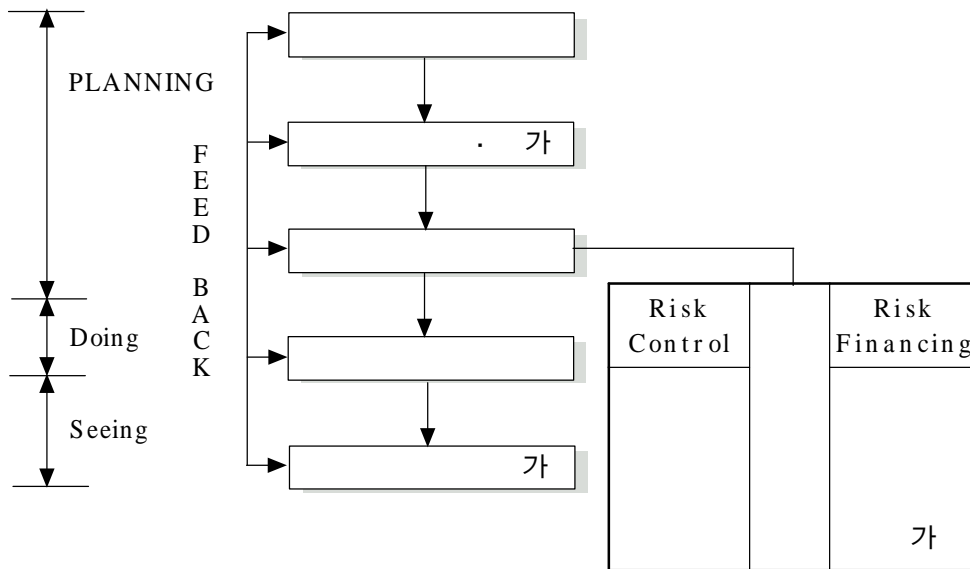
3) George E. Rejda, op. cit., p. 8.  
 4) , , p. 111.



2.

가 (identification of risk) 가 (evaluation of risk) .

【 1】 5



: , , p.19.

(pre loss control) (post loss control) (loss prevention),

(loss reduction), (loss avoidance), 가(non-insurance transfer)가  
, (risk financing) 가  
(risk retention) .

1) (risk identification)

, (loss  
exposure)

가

2)

(1) (inspection)



(2) (analysis of internal records)

(3) (system hazard analysis questionnaire)

(4) (check list)

가  
가

(5) (system approach)

(subsystem)

(Hazard Logic Tree; HLT)

가

(peril)

(hazard)

(Fault Tree Analysis; FTA)

가

가

가

(HLT)

(Gross Hazard Analysis; GHA)

(HLT)

가

3)

가(risk analysis and evaluation)

, 가

, 가

(frequency of loss)

(severity of loss)

(Prouty)

.8)

(almost nil)

가

(slight)

8)

, “

”, 『

』 12 , 1991, p. 212.

(moderate)

(definite)

(Fridlander)

.9)

( ) 가 가 (normal  
loss expectancy)

( ) 가 (maximum probable loss)

( ) 가 가 (maximum possible loss)

가 ,

가 .

4) (developing and selection of risk management tools)

(risk control)

(risk financing)

(1) (pre loss control)

(exposure avoidance), (loss  
reduction), (loss prevention), (segregation or

---

9) Ibid., pp. 212 213.

separation of exposure), (pooling), 가(non-insurance transfer)  
가 .

(exposure avoidance)

(loss exposure)

, 가  
가 .

(loss reduction)

(loss prevention)

가

(segregation or separation of exposure)

가

가

(risk pooling)

, 가

가(non-insurance transfer)

가가 . 가

가 ,

3 가 . 가

(contract),  
agreement)

(leases),  
가  
(out-sourcing),  
.

(hold-harmless

(2)

(post loss control)

(risk retention)

가(contractual risk transfer)-

(risk retention)

3 ,

가

가

가 (self-insurance) 가

가

가

가 (contractual risk transfer)

가

가

5)

가

가

가 【 2】 . ,

(frequencies of risk)

(severity of risk)

가 (A), 가

(B),



3

1

(NVOCC)

1.

가

(moral risk)

가

가

가

가

가

.11)

1)

가

가

가

11) , ,<sup>1)</sup> , 1991, pp. 5 7.



가 2010 가

1 4 7 TEU 1998 1 6 7 TEU

2 5 TEU

1996 7 52.9% : 47.1%

1993

44.7% 1995 47.2%, 1996 47.1% 가 .12)

【 3】

( : TEU)

1990	66	17	83
1992	80	20	100
1994	100	24	124
1996	119	28	147
1998	134	33	167
2000*	152	38	190
2006*	180	46	226
2010*	200	50	250

\*

: Containerisation International '99. 4

12) ,<sup>12)</sup> , , 1998, p. 181.

,

,

가 .

2) 가

가 가 ,

( ,

)가 ,

가 .

가 가

3)

,

가 .

가

가 .

가

가

2.

가

,

가

, ,

1 5

,

가

, ,

,

, 6

(cell)

,

(

.)

가

,

가

가

가 . ,

,

,

(washing overboard)

, 가

(water hammer)

가 , ( , ) 가

가 .

(lashing) 가

가 가 .

, 1 가 ,

(hatch cover) 가

1

(dunnage)가 .

가 .13)

---

13) , , , pp. 7 8.

3.

(HLT)

1)

가

가

(seller)

(CY ; Container Yard)

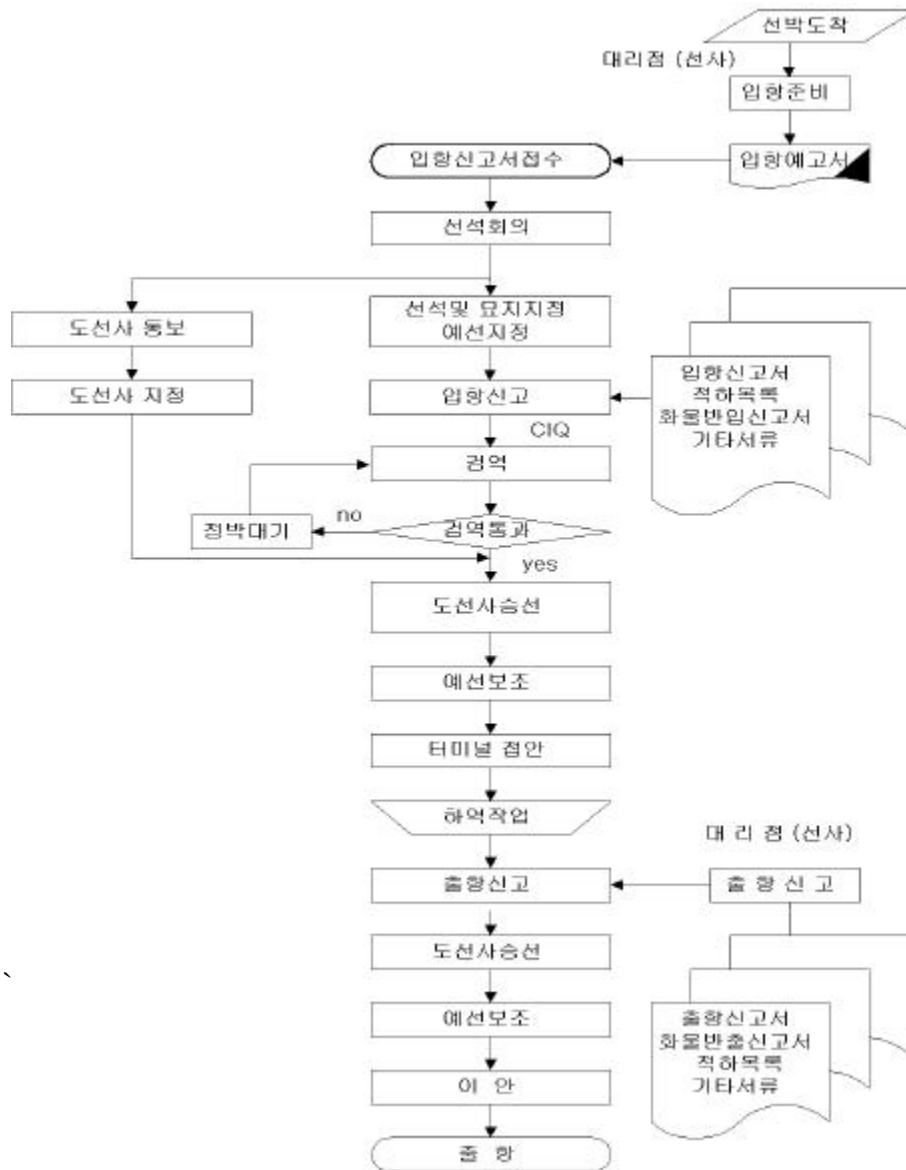
(CFS;Container Freight Station)

(buyer)

가

, 가  
 【 1】 .14)

【 1】



14) , , pp. 206 207.

2)

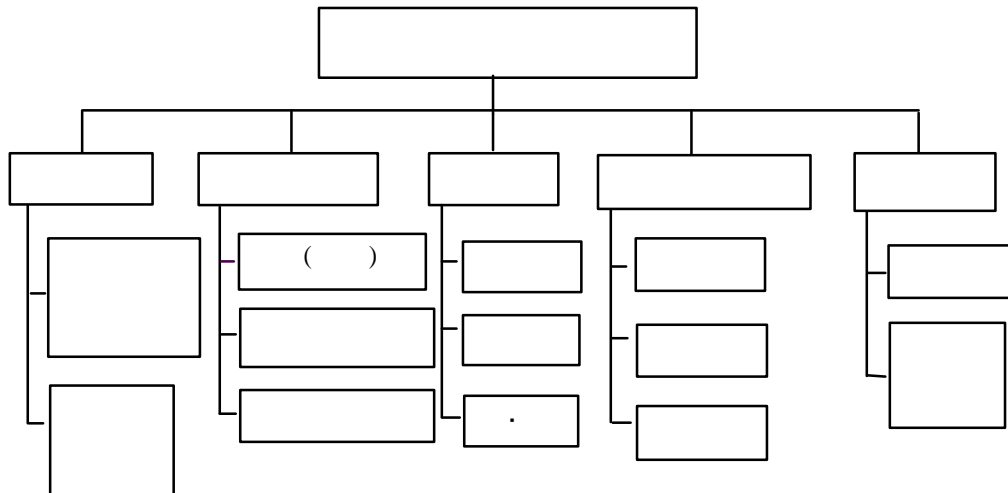
(HLT;Hazard Logic Tree)

【 2】

(heeling)

가

【 2】

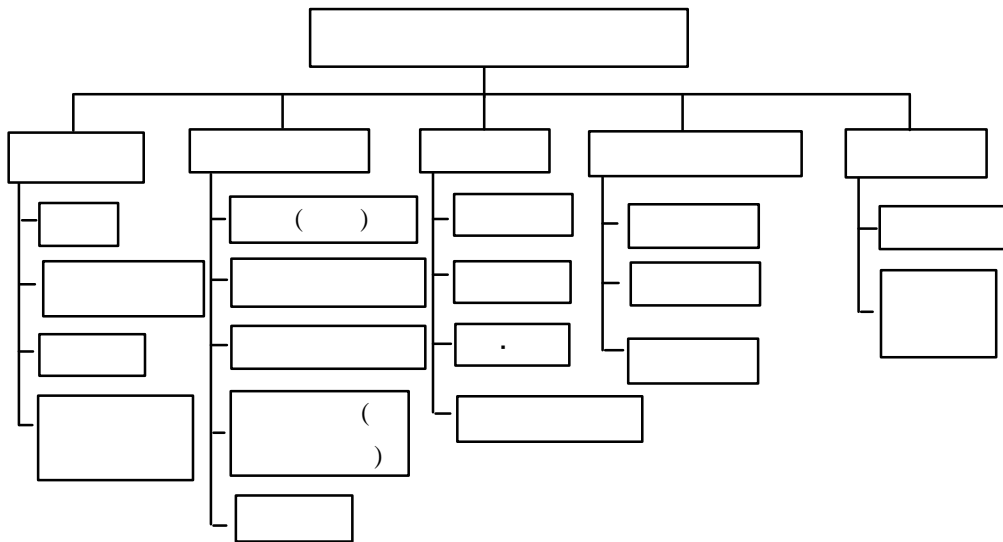


2)

(HLT)

【 3】 .

【 3】



,

,

,

,

가

,

가

,

,

,

,

,

.



2

가

1.

가

(H. W. Heinrich)

가

5가

( )

,15)

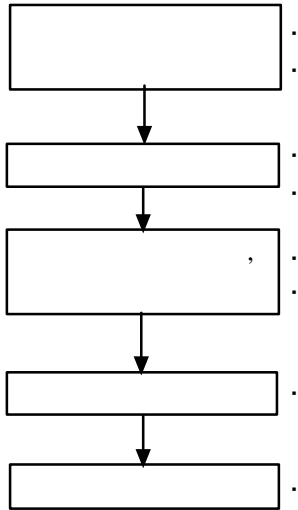
가

가

---

15) , , “  
 ”, 『 』 18 , 1994, p. 183.

【 4】



)

(Hijack),

.16)

---

16) , , , p. 29.

1)

(1) 1

:

: 1999 1 18

“ ”

(M/V KUO JANE)

가 가 가 (cell guide)

:

가

:

US \$ 580

(2) 2

: /

: 1993 2 3 (Lat. 50°N, Long. 156°W)

1993 1 26 (YOK)

964mb ( 11, 20m) 가

:

가

:

(3) 3

:

: 1997 10 29 0942

“ ”

(M/V QINGDAO EXPRESS)

(Qingdao)

7.25m

8.15m

286

(units)

1997 10 31

N-4

가

“

” (M/V HUA KUN) 가

.

가

,

3

.

90°

:

:

US \$ 412,843.09

,

7,300,000

.

2)

(1) 4

:

:

(Moji)

( )

(front panel)

(B.S.T port)

(ballast water)가

1

3

가 .

:

:

US \$ 35,704.80

(2) 5

:

(cigarettes wet damage)

: 1999 1 31

(Port of Macon, Long Beach,

U.S.A)

“

” (M/V HYUNDAI LIBERTY)

1999 1 14

,

(beaufort

scale) 7

.

28cm 가

.

(wet damage)

:

:

11,086,840 (CIF Pusan)

(3) 6

:

: 1999 6 22 “  
” (M/V MAHIMAHI) 1999 7 13

3)

(1) 7

:

: (Port of Charleston) “

” (M/V EVER DAINTY) (FCL)

1998 1 26

가,

1998 2 17

가

(wet damage)

가

:

가

:

US \$ 22,376.25

4) ( )

(1) 8

:

: 1991 10 27 (LGB) 8 (bay)

(under deck) (crane operator)가 40ft

(spreader bar) 20ft 2 가

20ft 6 .

:

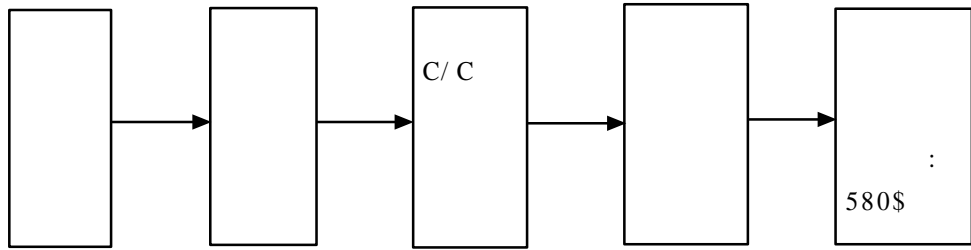
(type) .

:

2.

1) 1

【 5】 1



가

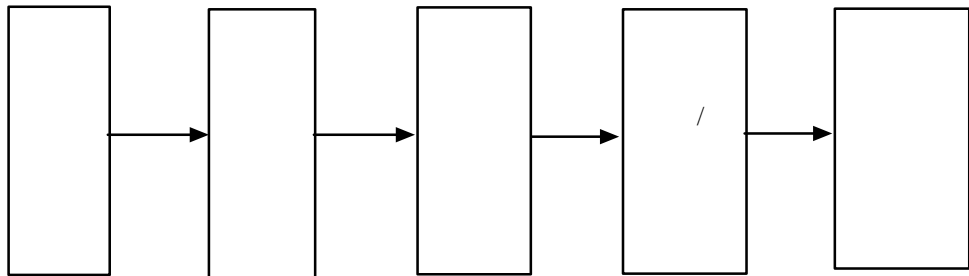
.

가

.

2) 2

【 6】 2



가

,

가

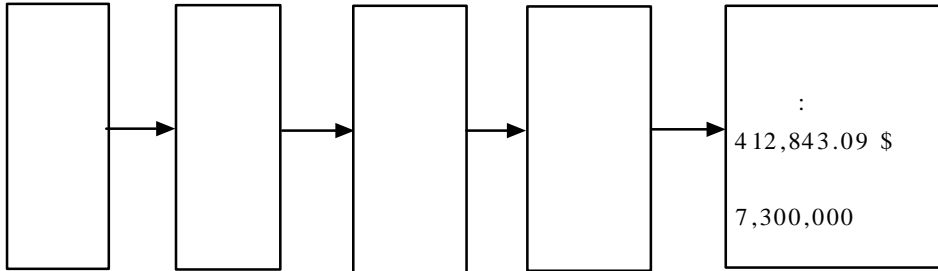
가

.



3) 3

【 7】 3



가

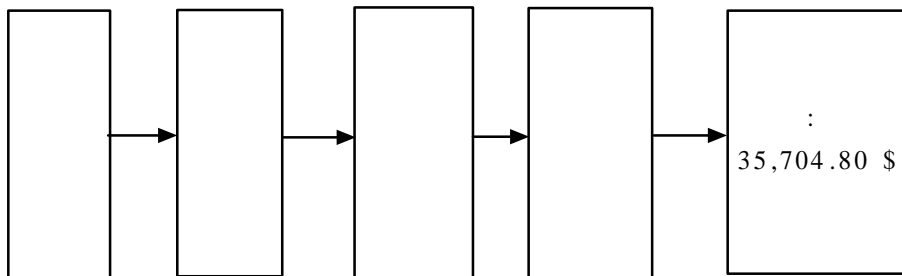
가

3/4

가

4) 4

【 8】 4

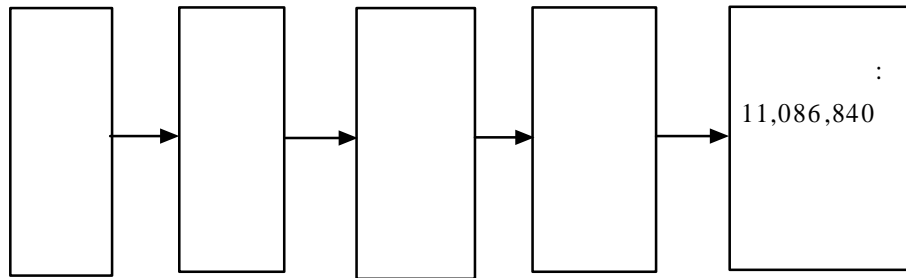


가

가 . 가 ,

5) 5

【 9】 5



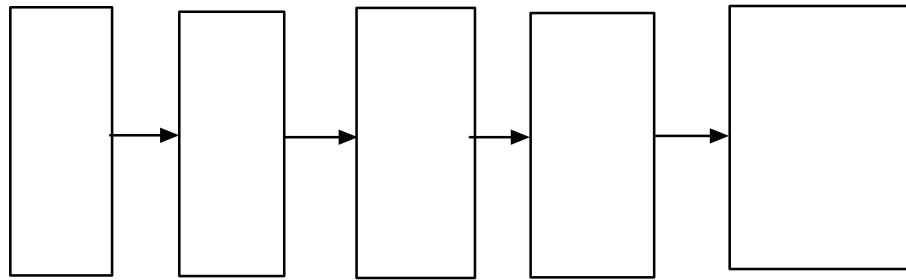
가

가

가

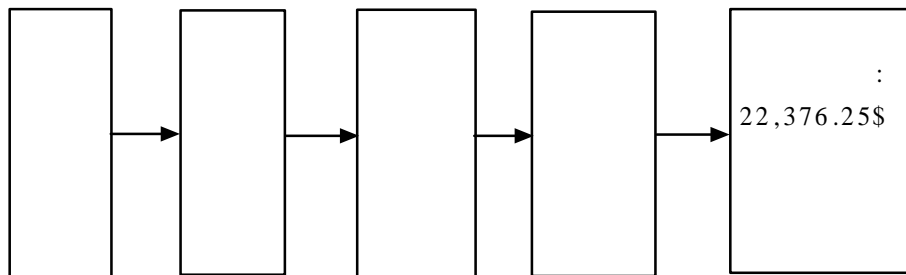
6) 6

【 10】 6



7) 7

【 11】 7

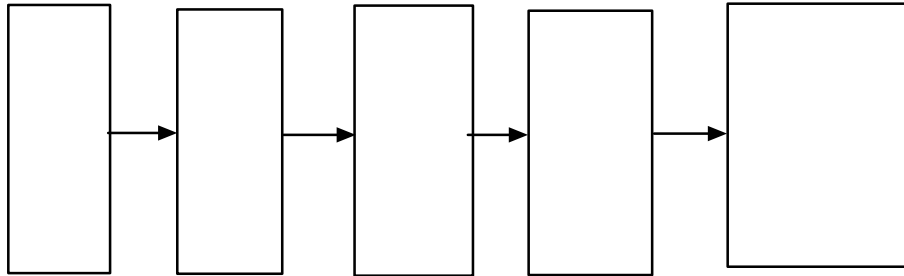


(IMO)

(CIP : Container Inspection Programme)<sup>17)</sup>

8) 8

【 12】 8



---

17) ' (IMO) 65 (MSC 65) ' 1995 5 .

4

1

1.

(risk financing)

(Institute Container Clause)

가 가

(P&I club)

(NVOCC)

가 가

(TT club) .18)

---

18) , 『  
1994, p. 86.

Moral Risk

』 , ,

2.

1)

가

(Container Itself Insurance ; Box Insurance)

1969 10 1 . 20 1987 1 1

(Container Itself

Insurance), 3  
Third Party Liability Insurance)

(Container Owner's

(Container Operator's Cargo Indemnity Insurance) 3

(轉落),

(高

潮)

가

(Institute Container Clause, Time)

(all risk)

(total loss), (general average), (salvage), (salvage  
charges), (sue and labour)

2)

1982

(ICC: Institute

Cargo Clause)

1983

(ITC-Hulls)

가 , , ,  
 , 1982 (ICC)  
 , 1983 (ITC)  
 .

3)  
 (1)  
 1 'covers all risks'  
 . 4  
 , ,  
 ,  
 가 .

(2)  
 5 1 . 2  
 , .  
 가 .

가  
 .  
 .  
 가  
 가 .

3 ,  
(mysterious disappearance, unexplained loss and loss discovered upon  
taking inventory) .

4 , 5

. 6

, . 7

가 ‘ , , .

. 가

6 1 ‘ , , ,

, , ,

. 2 , , ,

(barratry) (piracy) 가

3 , , ,

. 4 , ,

.



6

‘ , ’

. 6 2

“ ”(piracy)

“ ”(barratry)

.

6 4 (confiscation), (nationalization), (requisition)

,

가

,

가

.

,

1 6 “ ”(confiscation

or expropriation)

5 1 3 “requisition or

preemption”

,

7

가 ,

( , )

, ,

. 8

‘ , ’

, ,

.19)

19) , ²

Moral risk

♣,

, 1994, pp. 90 92.

(3) ( )

13 (MIA, 1906) (

6 1 ) (

)

, . 14

.

15 . 1

, ‘ (

)’ , ,

. 2

가

,

.

18 .

가 가 ,

가

가

1 .20)

---

20) *ibid.*, pp. 92-93.

4) ,

(1)

1 ‘ ( )

,

.

(total loss) (all risks)

,

.

5) ,

1 ) , , , , , ,

) , , , , , ) , , ,

,

.

1 ) (

가 ) ; ; , 가 , )

,

.

5 , 1

. 1 ,

.

)

) , , , , 5 (

)

)  
) 가 가 , , , ,  
,  
) ( , ) , , ,  
) , ,  
)  
가 ) ‘  
, 가 ‘ ,  
, )

(marine risk) 가 .  
6 1 ‘Water Borne’  
. 가  
, )  
(Air Borne) ) 가  
가

6 2 가 ,  
( 3 a ) ‘  
, 가  
,

6 3 가

,  
7

. 1 1982 ( )  
)("Institute war Cancellation Clause-Cargo-1/12/82)  
14 7 . 2  
) , ) , , ,  
, 5 ( )  
) ,  
가 .21)

2

1. (P&I Club)

가 가 , 1855

5 1 (Peter Tindall)<sup>22)</sup>

21) Ibid., pp. 93-95.  
22)

(Hull Club)

(Protection Club ; The Shipowners' Mutual Protection Society)

19 (Indemnity)

(Bill of Lading)

1870 (Westernhope)

23) 1870

(New Castle)

(Indemnity Club) 24) (P&I Club)

1)

(P & I)

(P&I enters when Hull leaves).

23) (New Castle) 가 (Cape Town)

(Port Elizabeth)

(Return voyage) 가

(Deviation)

(Protection Club)-The North of England Protection Club-

24) The Steamship Owners' Mutual Protection and Indemnity Association  
The North of England Protection Association The North of  
England Protection and Indemnity Association Ltd.

3/4

1/4

(P&I)

가

가

가

( )

(P&I) 가

(full condition)

가 가

가

.25)

Class : (collision liability)

Class : (cargo liability)

Class : (war risk)

Class : / (freight/ disbursement)

Class : (defence association)

(decline), (defend), (claim)

2)

(1) (protecting risk)

( ) .

25) , 『 』 , : , 1995, pp. 70~71.

·  
·

가

( )

- 1/4

-

, ( )

( )

가

, , , , , 가 ( )

가

-

(2) (indemnity risks)

- 가

가



, , -  
(hull & machinery) (excess liability)  
가 가

( )  
-  
(Omnibus  
Clause) .

2. (TT Club)  
(P&I club) (NVOCC)  
.  
,  
가 가

1968 6 1 (P&I Club) 3 26)  
가 (Through Transit Marine Mutual Assurance  
Association) .27)

---

26) 3 U.K. P&I Club, West of England Club Standard P&I Club .  
27) 'Through Transit Marine Mutual Assurance Association Ltd.(TTMM) '

가

.28)

(liability to the cargo owner)

(terms of trade) (nature of liability)

(third party liability)

가

(non-contractual liability / liability in tort)

가

(NVOCC)

---

1977 1 'Through Transport Mutual Insurance Association(TMIA)'  
 TT Club(The Transport Mutual)  
 (Bermuda) . ( )  
 28) , 『 , 1994, pp. 82 83. 』,

1)

bills of lading) (P&I club) (TT club) (TT club) (P&I club) (Through

. , . , .

3

3 , ,

,

, , , , .

2)

(NVOCC)

(NVOCC)

가

主運送人

.29)

가

'(door to door)

(TT club)

3

---

29) Ibid., p. 85.

, 가 ,

가

(identification of

risks)

가

(inspection),

( )

가

(risk control)

, 가

(loss control)

(risk financing)가

가

가

1 5

가

, 6

(cell)

가

가 , 가 , 가  
가 가 . ,  
,  
, (washing  
overboard)  
.  
,  
,  
가  
.  
,  
,  
가  
,  
3  
(P&I club) (TT club)

가 .

【       】

【1】       , 『       』,       , 1991

【2】       , 『       Moral Risk』,       , 1994

【3】 -----, 『Forwarder』,       , 1993

【4】       , 『       』,       , 1998

【5】       , 『       』,       , 1995

【6】       , “       ”, 『       』 12 , 1991

【7】       ,       , 『       』,       , 1990

【8】       , 『       』,       , 1991

【9】       , 『       』,       , 1989

【10】       , “       ”,       , 『       』 99 2 , 1999



- 【11】 , 『 -  
- 』,  
 , 1994
- 【12】 , 『 』, , 1999
- 【13】 , “ ”, 『 』  
2 , 1985
- 【14】 , “ P&I ”,  
『 』 24 , 1997
- 【15】 , 『 』, , 1995
- 【16】 , 『 P&I 』, : , 1988
- 【17】 , “ ”,  
『 』 17 , 1993
- 【18】 -----, “ ”, 『 』 19 , 1994
- 【19】 , “ ”,  
『 』 18 , 1994
- 【20】 , 『 』, , 1998
- 【21】 , “ ”, 『 』 99 5 , 1999
- 【22】 , “ ”,  
『 』 19 , 1994

- 【23】 , “ (P&I) ”, 『 99 3 ,  
4 , 1999
- 【24】 , 『 , 『,  
, 1991
- 【25】 , , “  
”, 『 『 18 , 1994
- 【26】 , 『 .  
『, , 1995
- 【27】 , 『Container Terminal』 8 , 1999
- 【28】 , 『 『, , 1983

【           】

- 【1】 Ademuni-Odeje, *Shipping in International Trade Relations*, Avebury Gover Publishing, 1988
- 【2】 A.D.Hughes, *Carriage of Goods by Sea*, Black stone Press Limited Company, 1994
- 【3】 C. Arthur Williams, Jr., Richard M. Heins, *Risk Management and Insurance*, Mcgraw-Hill Book Company, 1989
- 【4】 Christopher Hill, Bill Robertson, Steven J. Hazelwood, *An Introduction to P&I*, Lloyd's of London Press Ltd, 1988
- 【5】 Clive M. Schmittmoff, *Schmittmoff's Export Trade*, London Stevens C. Sons, 1990
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