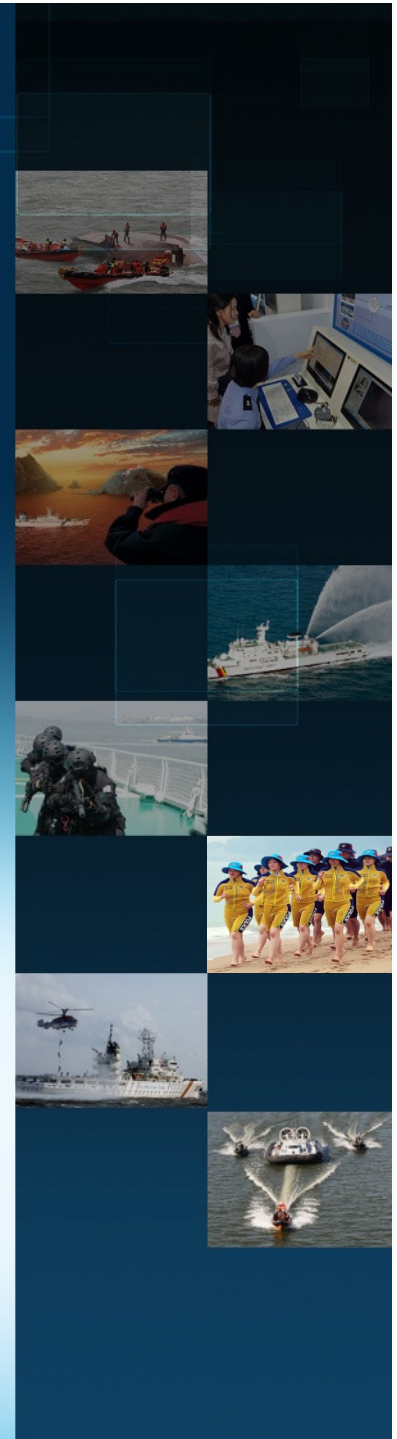




Research and Development of Automatic VHF Operation Status Identification Feature through AIS



Edited by Young Sup Kim



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Background

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Expected Outcomes

- According to analysis outcome of maritime incidents, Vessel to Vessel, Vessel to Land Stations VHF telecommunication absence was major cause of incidents
- In this sense, by developing new equipment that can automatically recognize other vessels' VHF Operating Channel, effective prevention of maritime incident can come true



Unable to recognize VTS channel of Ship in trouble

II

(2) Development Period



Research Outsource Business : 70days (10weeks)

Contract
2015.09.16

Completion
2015.11.24



III

(1) Before Research Development



Existing VTS Center's Communication System (XXX VTS)



Communication Fail

III

(2) After Research Development



VTs Center's Communication System After Development



VTs Center (CH73)

② Try Vessel VHF Channel 12

③ Reply

④ Request Channel Alteration

⑤ Check Alteration to
Vessel VHF Channel

⑥ Call Vessel via Channel 73
and communicate



Target Vessel (CH12)

① Check target vessel's VHF Channel



Communication
Success

III

(3) After Research Development



Vessel & VTS Operating Console's Vessel information

The interface displays a map of the Korean coast with a vessel's position highlighted. A detailed information panel is shown on the right, containing the following data:

타겟 정보	
기본 정보	
MMIU	: 2440123456 Radar ID :
Ship Name	:
Call Sign	: IMO : 0
수신 시각	: 2015-09-03 10:32:39
상세 정보	
동작 정보	정확 정보(AIS) 경고 할당 메시지
수신국	
수신 시각	: 2015-09-03 10:32:39
위도	: 34°05.669' N
경도	: 127°47.259' E
속도(SOG)	: 2.8 Kn
진로(COG)	: 346.7°
진수(True Heading)	: Not Available
회전속도(ROT)	: Not Turning
도착예정시간(ETA)	: High (< 10m)
VHF 정보	
수신장비	: DSC
수신 시각	: 2015-09-03 10:32:39
위도	: 34°05.669' N
경도	: 127°47.259' E
채널	: CH 16
음량	: 77
전원상태	: ON
TX/Busy 상태	: Status : Busy
송신 출력	: 12 W

Below the map, there are icons for AIS message 8 and VHF DSC, along with a desk setup icon.

This circular inset provides a detailed view of the VHF information section, showing the following data:

VHF 정보	
수신장비	: DSC
수신 시각	: 2015-09-03 10:32:39
위도	: 34°05.669' N
경도	: 127°47.259' E
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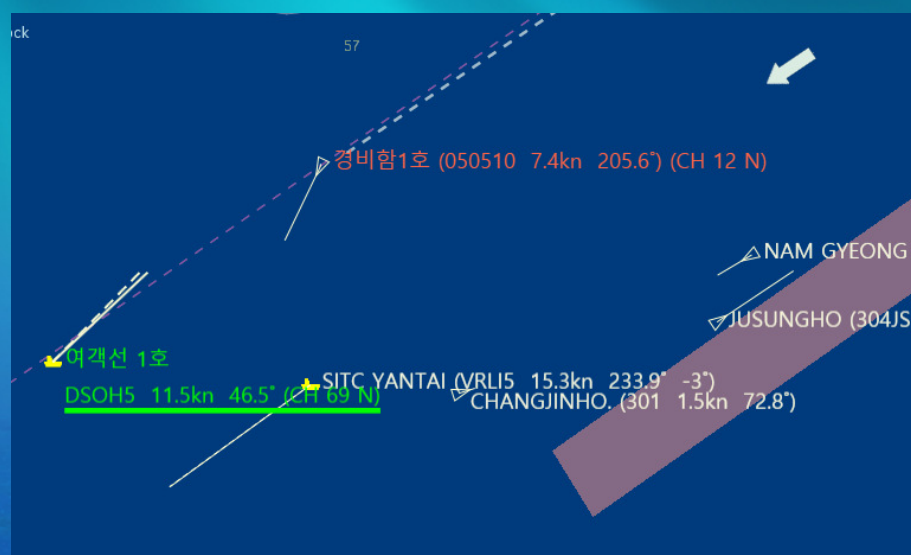
Below the VHF information, there is a section for 주변 선박 검색 (Search for nearby ships) with buttons for 닫기 (Close) and 검색 (Search).



(4) After Research Development



VHF channel information are displayed on VTS operating console



OK

Different channel in use

VHF turned off

Increased efficiency on VTS service



IV

Development Outline (1)



1st Step : Ship to VTS

Heading	346.7°
Heading Rate (ROT)	Not Available
Turning	Not Turning
Estimated Time of Arrival (ETA)	
위치 정확도	High (< 10m)
VHF 정보	
수신장비	DSC
수신 시각	2015-09-03 10:32:39
위도	34°05.669' N
경도	127°47.259' E
채널	CH 16
용량	77
전원상태	ON
TX/Busy 상태	Status : Busy
송신 출력	12 W
주변 선박 검색	
닫기	취소

Vessel VHF



VHF
Info.
Extract

Development equipment



VHF
Info.
Relay

Vessel AIS



A vessel's development equipment

AIS



VHF
Info.
Relay



VTS operating console

IV

Development Outline (2)



1st Step : Ship to Ship

Heading	346.7°
Course (ROT)	Not Available
Turning	Not Turning
ETA	Not Available
위치 정확도	High (< 10m)
VHF 정보	
수신장비	DSC
수신 시각	2015-09-03 10:32:39
위도	34°05.669' N
경도	127°47.259' E
채널	CH 16
용량	77
전원상태	ON
TX/Busy 상태	Status : Busy
송신 출력	12 W
주변 선박 검색	
닫기	차



Vessel's VHF



VID (VHF Identification Device)



AIS

A vessel's development equipment



Vessel's VHF



VID (VHF Identification Device)



AIS

B vessel's development equipment

IV

Development Outline (3)



2nd Step : Ship to VTS



IV

Development Outline (4)



2ndStep : Ship to Ship





Expected Outcomes



Search

Secure Golden Time

- Provide rapid call information when distress occurs
- Reduction of unnecessary calls
- Rapid calls and communications to secure Golden Time

Conduct Effective Traffic Control Task

Traffic Control

- Aware of Vessel's VHF Communication Channel at all time
- If distress or dangerous situation occurs, conduct immediate communication
- Provide inter-vessel communication operation for navigation

- Immediate communication with distressed vessel
- Recognition of Vessel communication channel for Rescue
- Prevention of intervention of channel operation by other vessels

Rescue

Minimize Damage via Rapid Communication

- Aware of Vessel's VHF Communication Channel at all time
- If distress or dangerous situation occurs, conduct immediate communication
- Provide inter-vessel communication operation for navigation

Raise International Stature of Korea Coast Guard

Stature



- Currently, domestic patent was completed. International patent is on progress



Thank You!

Any Question?