Asia-Pacific
Economic Cooperation

2005/STAR/015
Maritime Security Panel 1

Introduction of Vessel Monitoring System (VMS) Technology

Submitted by: Saracom

Third Conference on Secure Trade in the APEC Region
Incheon, Korea
25-26 February 2005

3rd International conference of STAR on APEC

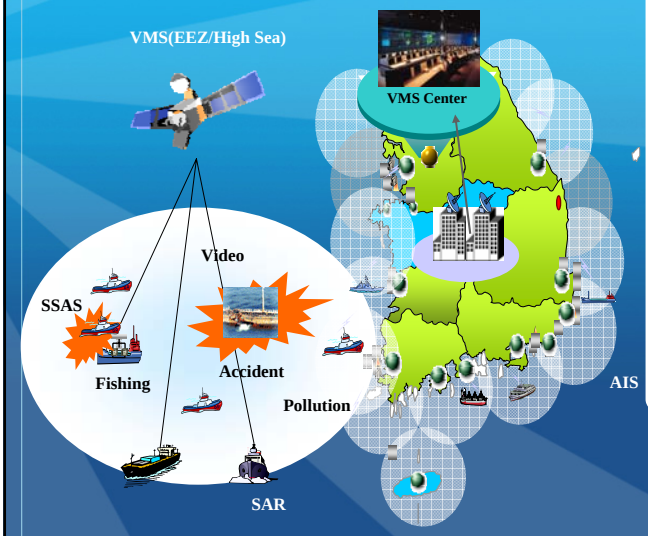
Introduction of VMS Technology

Feb. 2005
Jungchul Bae
justin@saracom.net
SARACOM, KOREA

Saracom

CONTENTS

Introduction of VMS



Advantages of VMS

- Adoption of new maritime communication technology
- Employment of Communication Equipment on ships
- ECDIS-based operation in monitoring center
- Web-based service
- Continuous and real-time monitoring of ship's location

Introduction of VMS

Ship's equipments for VMS

AIS

- Components :
  Transmitter, 2TDMA Receiver, DSC Receiver
- Frequency Range :
  156.025 ~ 162.025 MHz

SSAS

- Security Alert Transmitter
- Providing covert switch
- Signal transfer through satellite

Inmarsat-C

- Frequency Range :
  TX : 1625.5~1646.5MHz
  RX : 1530.0~1545.0MHz
- Using Inmarsat Satellite

Others

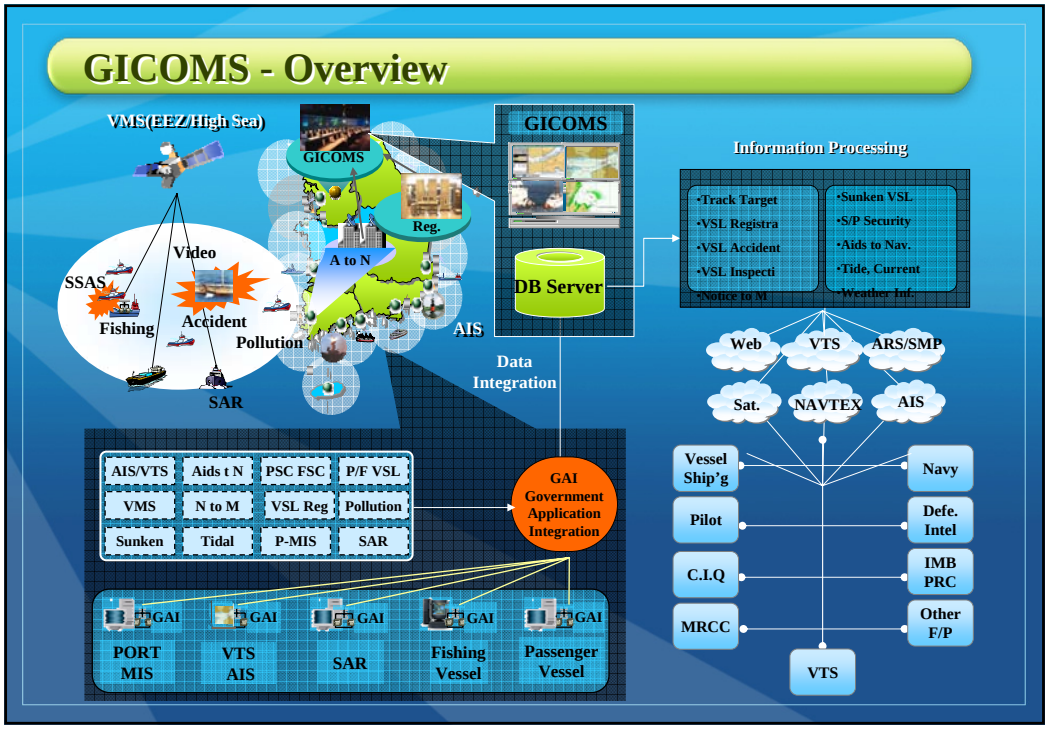
- Frequency : 137~138Mhz
- Power Source
  Normal AC 220V/100V,
  Emergency DC 24V
- Using ORBCOMM Satellite

Implementation of GICOMS

General Information Center for Maritime Safety/Security

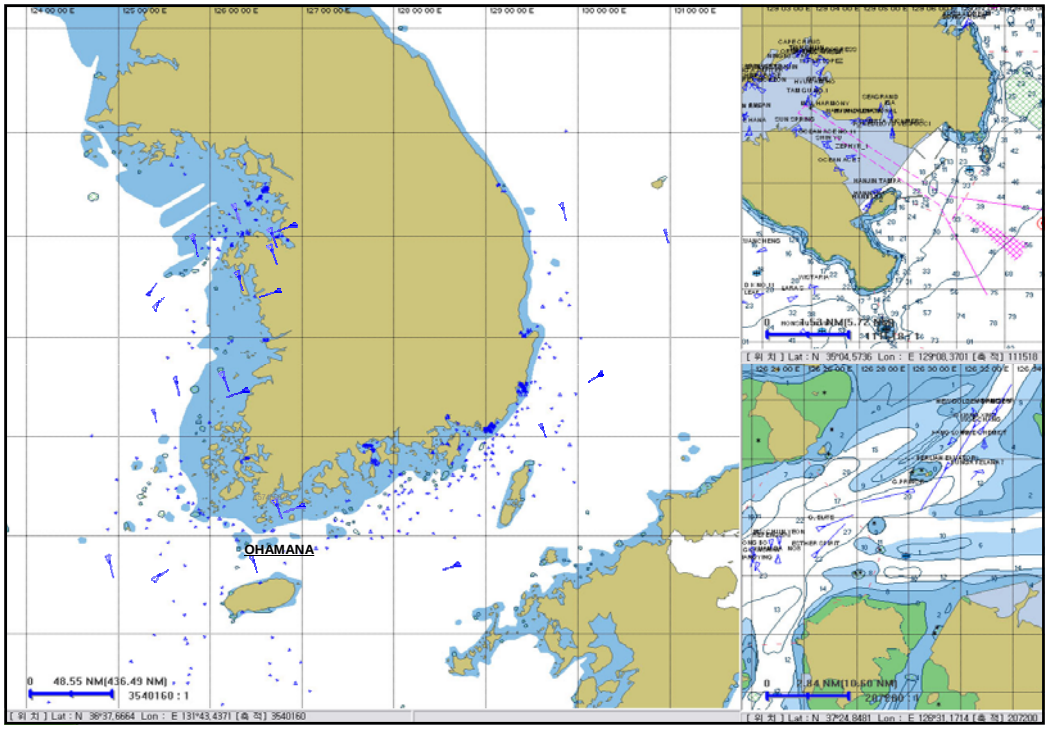
- Long term project - Feasibility study, 2 years (2001-2002)
  - Implementation, 5 years (2003-2007)
- Establishing networking for sharing and providing information on AIS, Radar, Satellite terminal
- DB integrating for maritime safety
  - SAR, Oil Pollution prevention & response, Terrorism, Piracy, Meteorological data, Tide, Notice to Mariner, Aids to Navigation, Vessel Accidents Data
- Assistance of Decision-making in any event
- Supporting domestic & international coordination/cooperation
  - Displaying all information in one screen

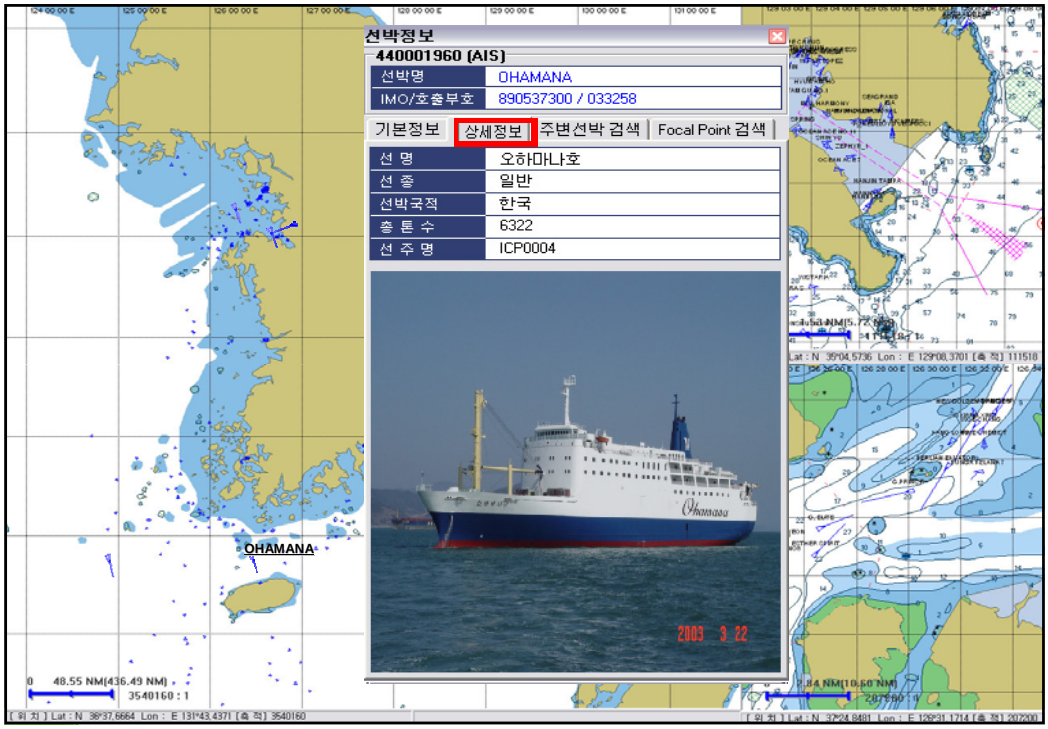
GICOMS - Overview



GICOMS - Demo

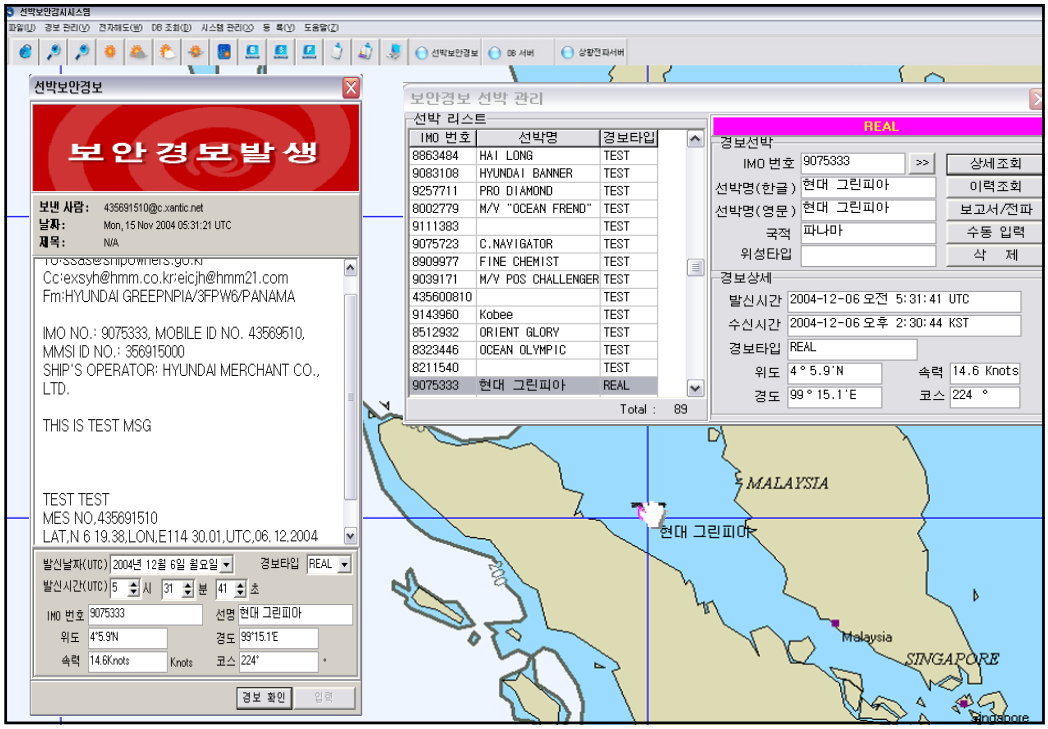
1. Monitoring Vessel Traffic
2. Receiving Ship Security Alert Message
3. Monitoring Coastal Oil-Tanker
4. Monitoring Fishery boat in EEZ
5. Revivving Traffic Status at Accident Area
6. Provision Vessel Location to shipping Company
7. Sending Navigational Aids Information to the ship

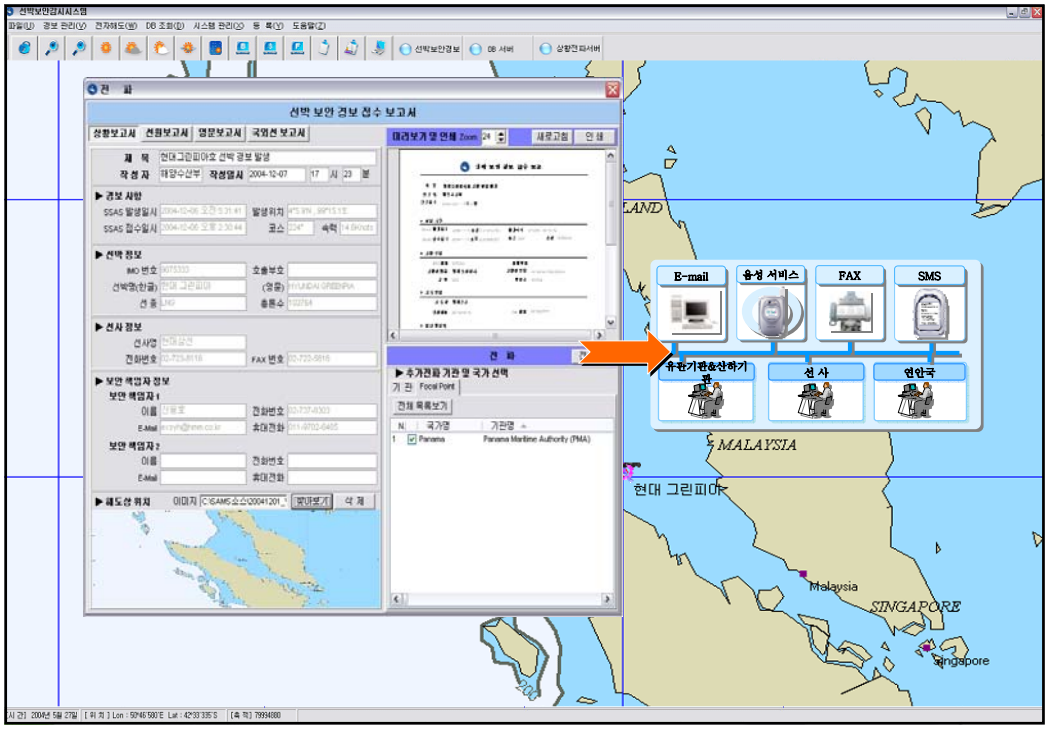


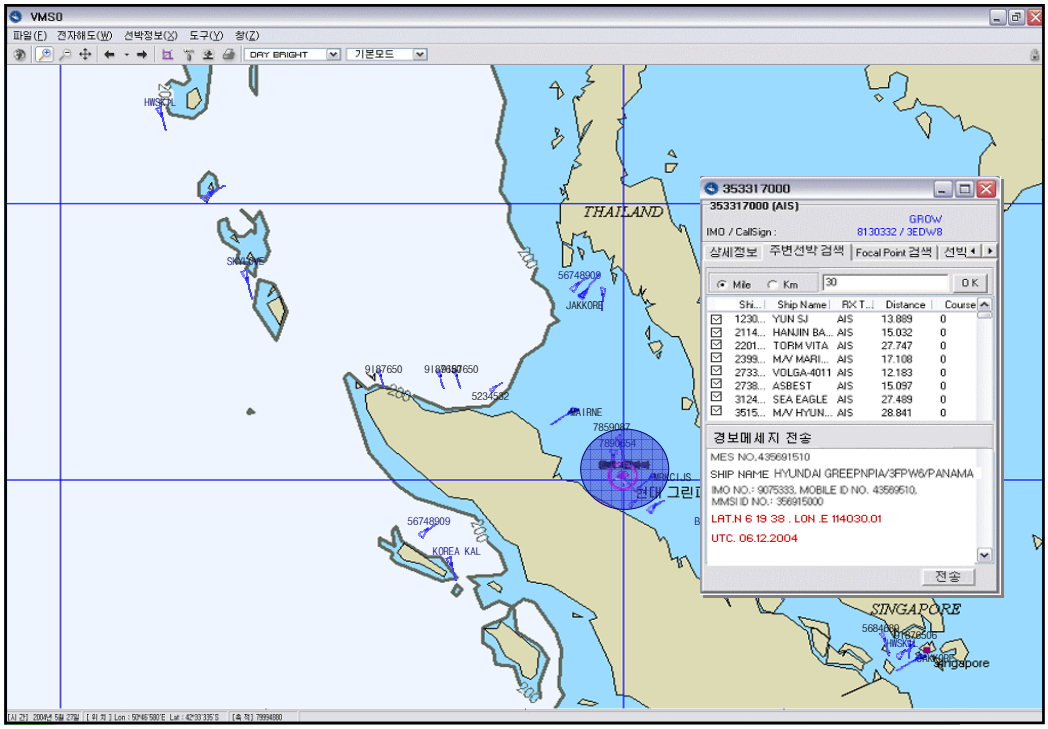


GICOMS - Demo

1. Monitoring Vessel Traffic
2. Receiving Ship Security Alert Message
3. Monitoring Coastal Oil-Tanker
4. Monitoring Fishery boat in EEZ
5. Reviving Traffic Status at Accident Area
6. Providing Vessel Location to shipping Company
7. Sending Navigation Aids Information to the ship

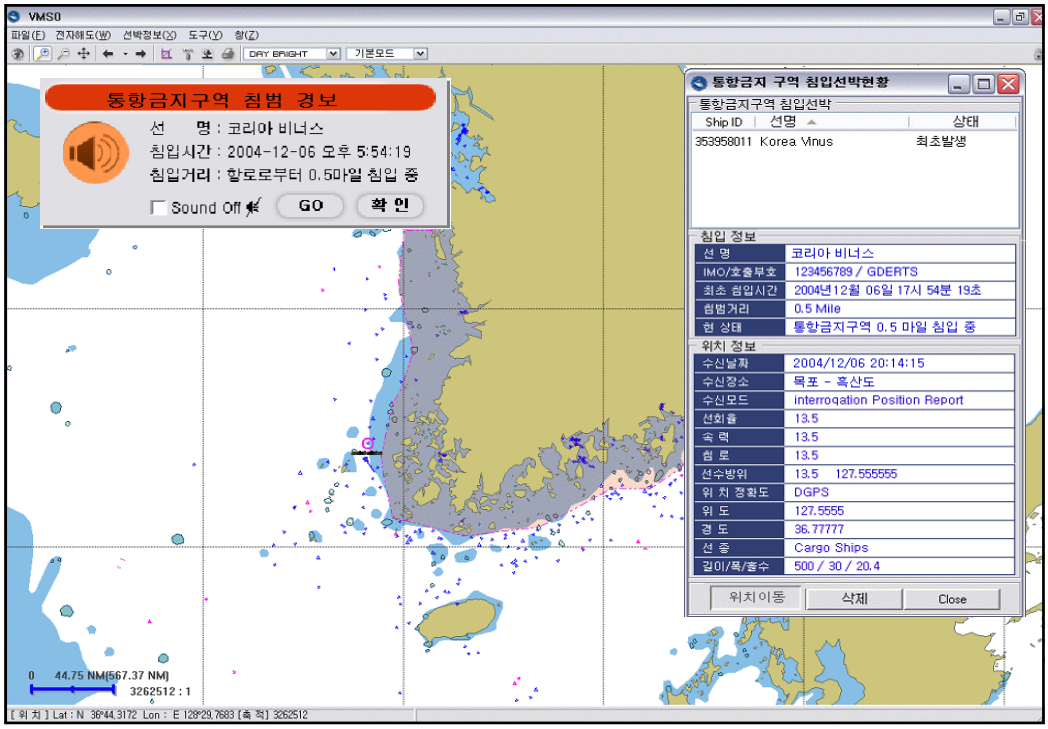

선박보안경보
보 안 경 보 발 생
보낸 사람: 435691510@c.xantic.net
날짜: Mon, 15 Nov 2004 05:31:21 UTC
제목: N/A
Cc:exsyh@hmm.co.kr;eicjh@hmm21.com
Fm:HYUNDAI GREEPNPIA/3FPW6/PANAMA
IMO NO.: 9075333, MOBILE ID NO. 43569510,
MMSI ID NO.: 356915000
SHIP'S OPERATOR: HYUNDAI MERCHANT CO., LTD.
THIS IS TEST MSG
TEST TEST
MES NO.435691510
LAT,N 6 19.38,LON,E114 30.01,UTC,06.12.2004
경보 확인
보안경보 선박 관리
선박 리스트
IMO 번호 선박명 경보타입
8863484 HAI LONG TEST
9083108 HYUNDAI BANNER TEST
9257711 PRO DIAMOND TEST
8002779 M/V "OCEAN FREND" TEST
9111383 TEST
9075723 C.NAVIGATOR TEST
8909977 FINE CHEMIST TEST
9039171 M/V POS CHALLENGER TEST
435600810 TEST
9143960 Kobee TEST
8512932 ORIENT GLORY TEST
8323446 OCEAN OLYMPIC TEST
8211540 TEST
9075333 현대 그린피아 REAL
Total : 89
REAL
경보선박
IMO 번호 9075333
선박명(한글) 현대 그린피아
선박명(영문) 현대 그린피아
국적 파나마
위성타입
상세조회
이력조회
보고서/전파
수동 입력
삭 제
경보상세
발신시간 2004-12-06 오전 5:31:41 UTC
수신시간 2004-12-06 오후 2:30:44 KST
경보타입 REAL
위도 4° 5.9'N
경도 99° 15.1'E
속력 14.6 Knots
코스 224 °
MALAYSIA
현대 그린피아
Malaysia
SINGAPORE

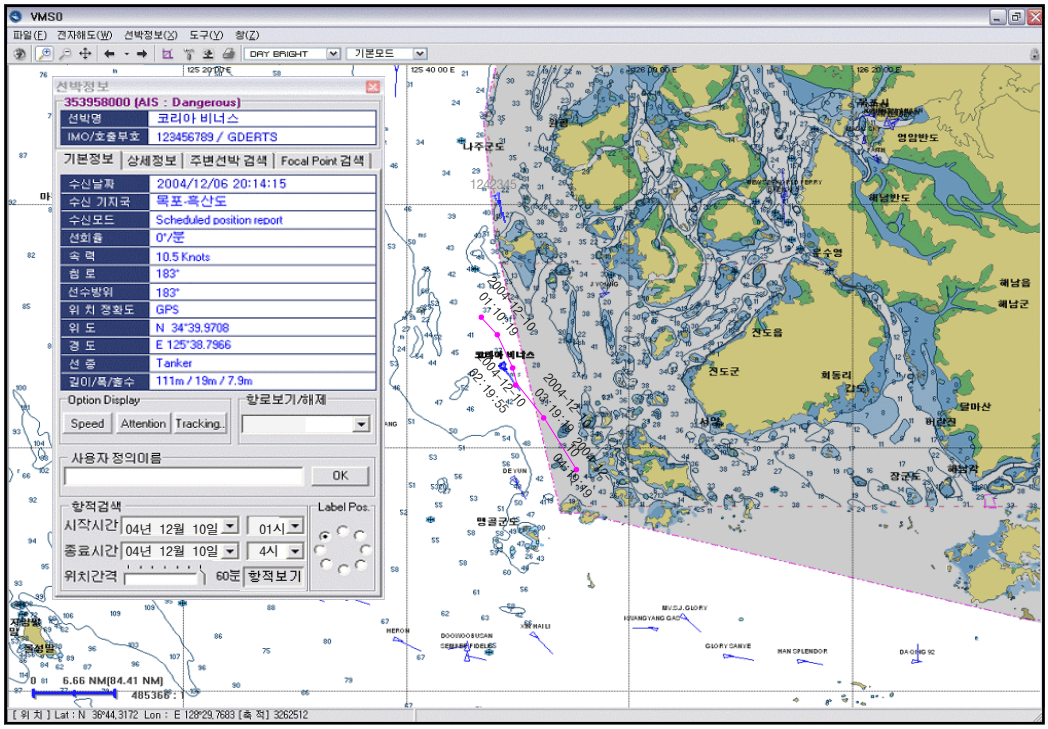

선박 보안 경보 접수 보고서
E-mail
음성 서비스
FAX
SMS
유관기관&상하기관
선 사
연안국
MALAYSIA
현대 그린피아
Malaysia
SINGAPORE



GICOMS - Demo

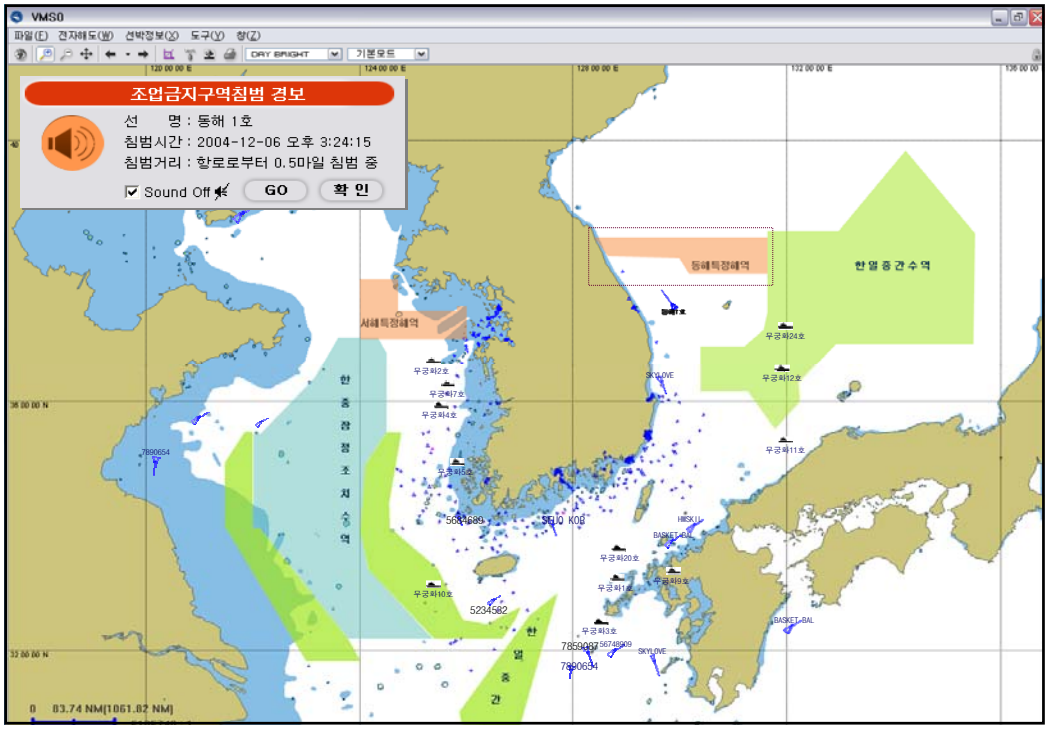
1. Monitoring Vessel Traffic
2. Receiving Ship Security Alert Message
3. Monitoring Coastal Oil-Tanker
4. Monitoring Fishery boat in EEZ
5. Reviving Traffic Status at Accident Area
6. Providing Vessel Location to shipping Company
7. Sending Navigational Aids Information to the ship

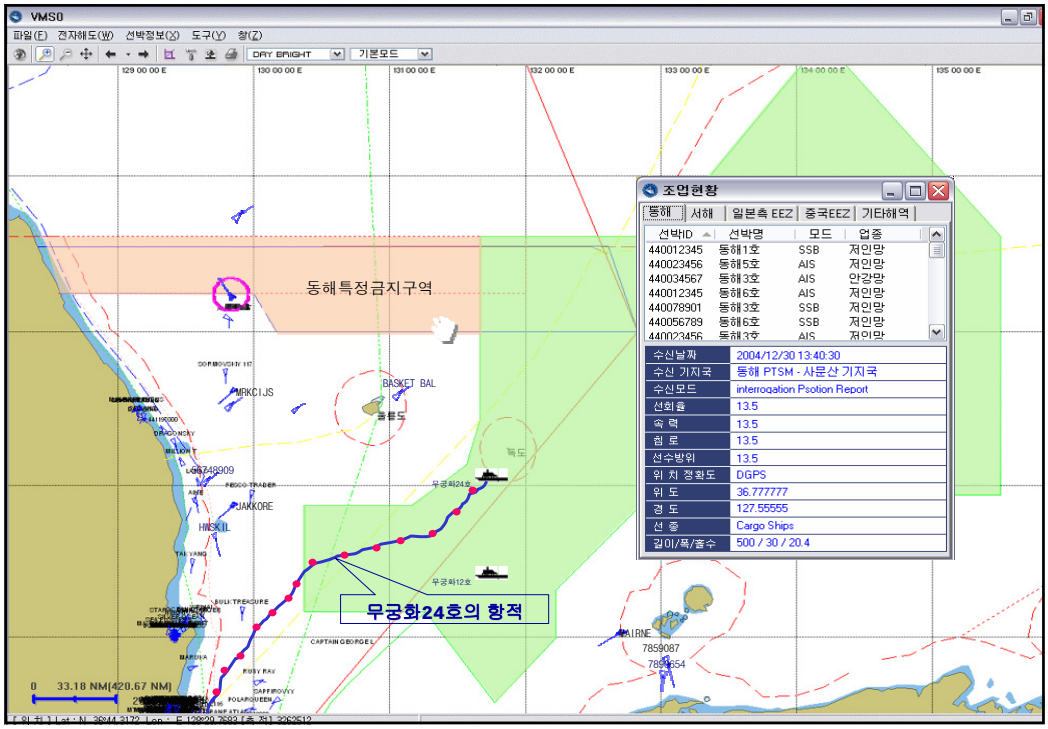

VMS0
통항금지구역 침범 경보
선 명 : 코리아 비너스
침입시간 : 2004-12-06 오후 5:54:19
침입거리 : 항로로부터 0.5마일 침입 중
Sound Off
GO
확 인
통항금지 구역 침입선박현황
통항금지구역 침입선박
Ship ID 선명 상태
353958011 Korea Venus 최초발생
침입 정보
선 명 코리아 비너스
IMO/호출부호 123456789 / GDERTS
최초 침입시간 2004년12월 06일 17시 54분 19초
침범거리 0.5 Mile
현 상태 통항금지구역 0.5 마일 침입 중
위치 정보
수신날짜 2004/12/06 20:14:15
수신장소 목포 - 흑산도
수신모드 Interroqation Position Report
선회율 13.5
속 력 13.5
침 로 13.5
선수방위 13.5 127.555555
위 치 정확도 DGPS
위 도 127.5555
경 도 36.77777
선 종 Cargo Ships
길이/폭/흘수 500 / 30 / 20.4
위치이동
삭제
Close
0 44.75 NM(567.37 NM)
3262512 : 1
[위 치] Lat : N 36°44.3172 Lon : E 128°29.7683 [축 적] 3262512


VMS0
선박정보
353958000 (AIS : Dangerous)
선박명 코리아 비너스
IMO/호출부호 123456789 / GDERTS
기본정보 상세정보 주변선박 검색 Focal Point 검색
수신날짜 2004/12/06 20:14:15
수신 기지국 목포-흑산도
수신모드 Scheduled position report
선회율 0°/분
속 력 10.5 Knots
침 로 183°
선수방위 183°
위 치 정확도 GPS
위 도 N 34°39.9708
경 도 E 125°38.7966
선 종 Tanker
길이/폭/흘수 111m / 19m / 7.9m
Option Display
Speed Attention Tracking
항로보기/해제
사용자 정의이름
OK
항적검색
시작시간 04년 12월 10일 01시
종료시간 04년 12월 10일 4시
위치간격 60분 항적보기
Label Pos.
6.66 NM(84.41 NM)
[위 치] Lat : N 36°44.3172 Lon : E 128°29.7683 [축 적] 3262512

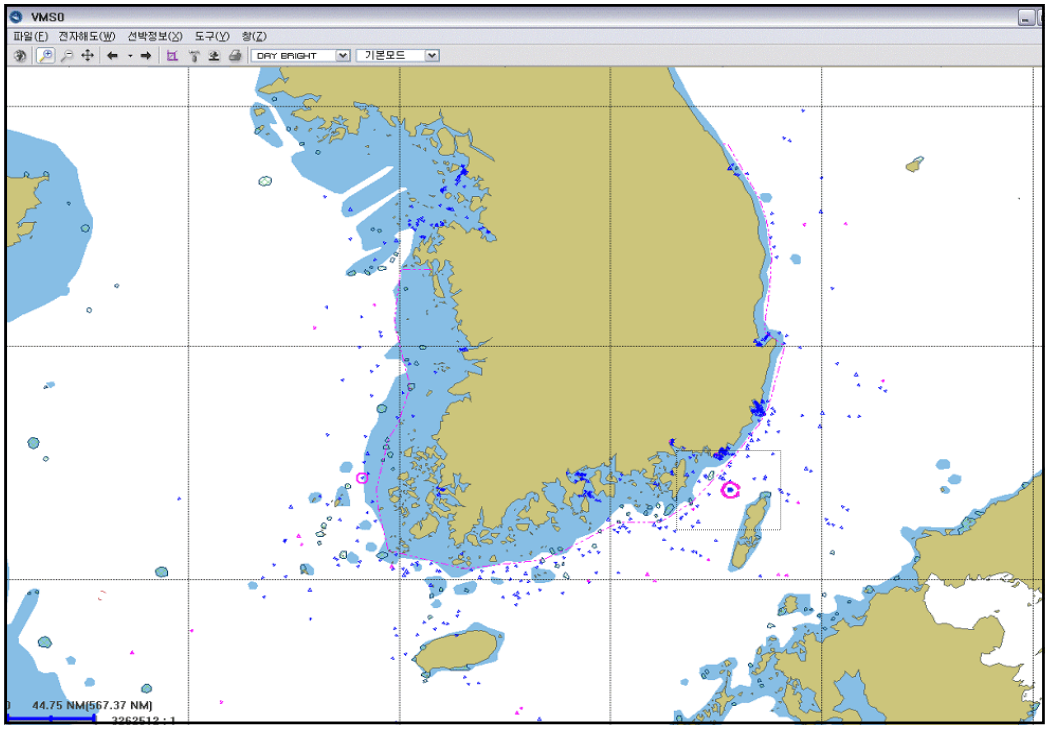
GICOMS - Demo

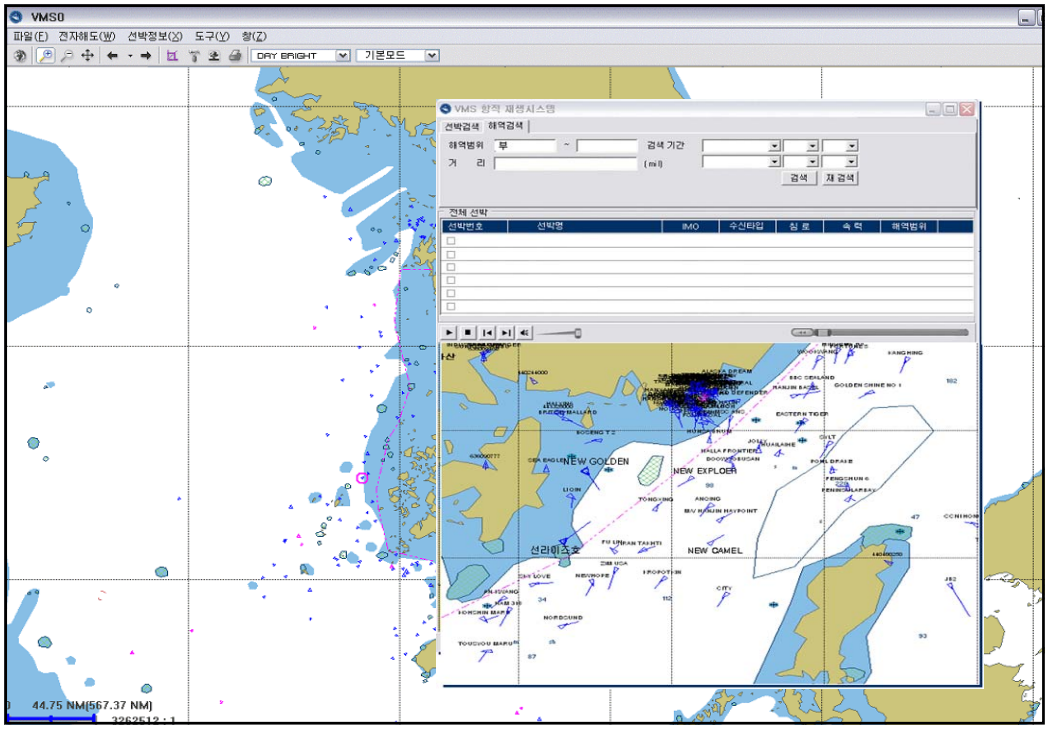
1. Monitoring Vessel Traffic
2. Receiving Ship Security Alert Message
3. Monitoring Coastal Oil-Tanker
4. Monitoring Fishery boat in EEZ
5. Reviving Traffic Status at Accident Area
6. Providing Vessel Location to shipping Company
7. Sending Navigational Aids Information to the ship




VMS0
동해특정금지구역
조업현황
동해
서해
일본측 EEZ
중국EEZ
기타해역
선박ID
선박명
모드
업종
440012345 동해1호 SSB 저인망
440023456 동해5호 AIS 저인망
440034567 동해3호 AIS 안강망
440012345 동해6호 AIS 저인망
440078901 동해3호 SSB 저인망
440056789 동해6호 SSB 저인망
수신날짜 2004/12/30 13:40:30
수신 기지국 동해 PTSM - 사문산 기지국
수신모드 interrogation Psotion Report
선회율 13.5
속 력 13.5
침 로 13.5
선수방위 13.5
위 치 정확도 DGPS
위 도 36.777777
경 도 127.55555
선 종 Cargo Ships
길이/폭/흘수 500 / 30 / 20.4
무궁화24호의 항적
33.18 NM(420.67 NM)

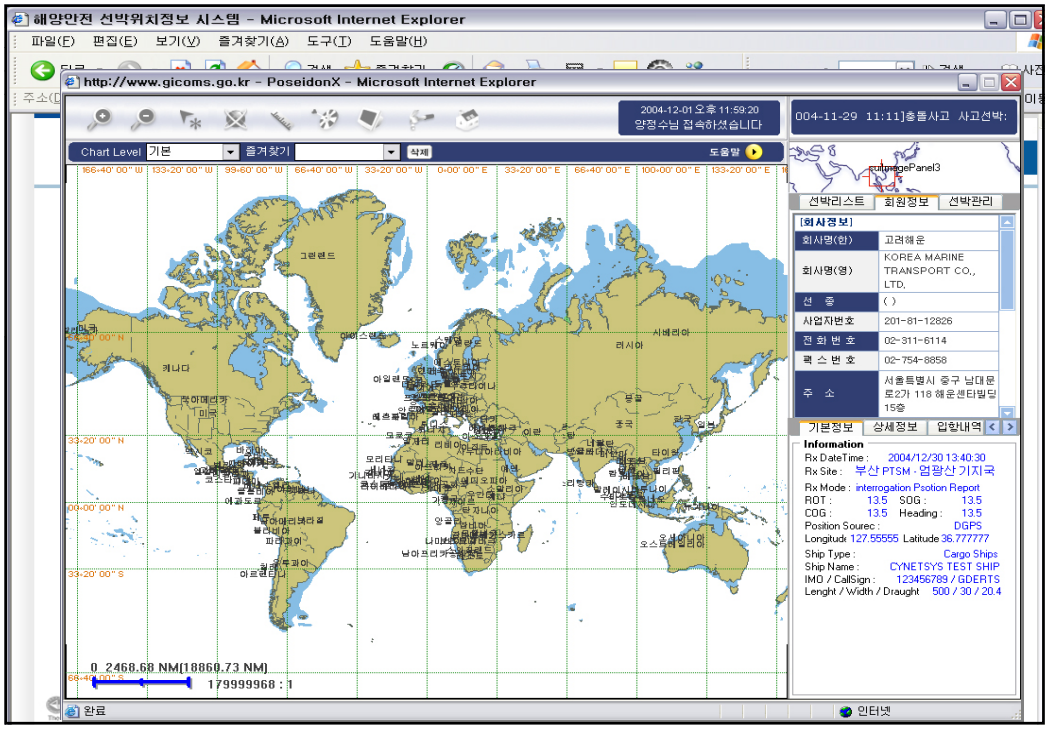

GICOMS - Demo
1. Monitoring Vessel Traffic
2. Receiving Ship Security Alert Message
3. Monitoring Coastal Oil-Tanker
4. Monitoring Fishery boat in EEZ
5. Reviving of Traffic Status at Accident Area
6. Providing Vessel Location to shipping Company
7. Sending Navigational Aids Information to the ship


VMS0
파일(F) 전자해도(W) 선박정보(X) 도구(Y) 창(Z)
DAY BRIGHT
기본모드
44.75 NM(567.37 NM)


VMS0
파일(F) 전자해도(W) 선박정보(X) 도구(Y) 창(Z)
DAY BRIGHT
기본모드
VMS 항적 재생시스템
선박검색
해역검색
검색
재검색
전체 선박
선박번호
선박명
IMO
수신타입
침 로
속 력
해역범위
NEW GOLDEN
NEW EXPLORER
NEW CAMEL
선라레조호
44.75 NM(567.37 NM)

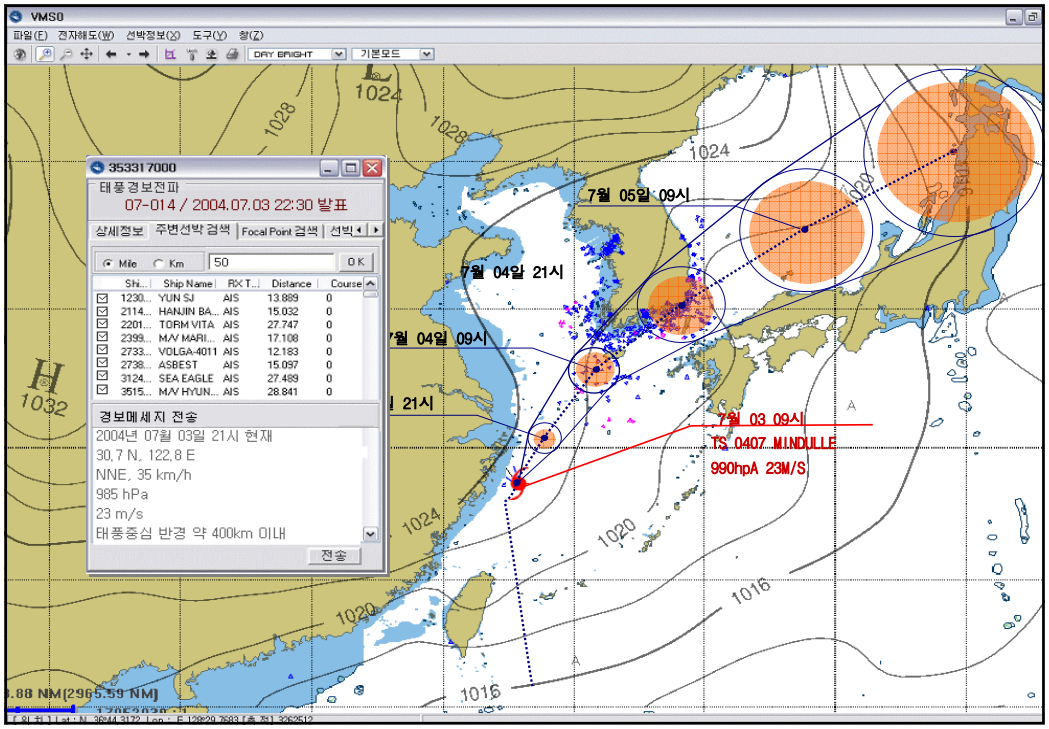
GICOMS - Demo

1. Monitoring Vessel Traffic
2. Receiving Ship Security Alert Message
3. Monitoring Coastal Oil-Tanker
4. Monitoring Fishery boat in EEZ
5. Reviving Traffic Status at Accident Area
6. Providing Vessel Location to shipping Company
7. Sending Navigational Aids Information to the ship



GICOMS - Demo

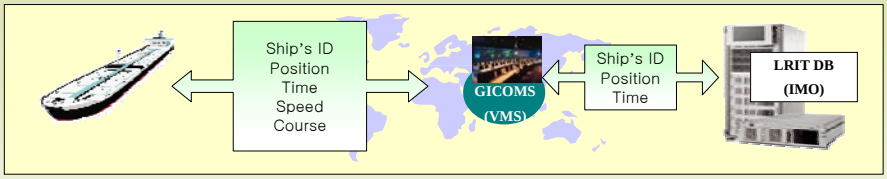
1. Monitoring Vessel Traffic
2. Receiving Ship Security Alert Message
3. Monitoring Coastal Oil-Tanker
4. Monitoring Fishery boat in EEZ
5. Reviving Traffic Status at Accident Area
6. Providing Vessel Location to shipping Company
7. Sending Navigational Aids Information to the ship



Conclusion

Establishment of GICOMS, the first in the world

Information sharing between KOREA VMS and LRIT Server



- ❖ **Fast and efficient action concerning ship's accidents**
- ❖ **Increasing port operation efficiency**
- ❖ **Preventing international dispute on EEZ**
- ❖ **Increasing international confidence in maritime safety**
- ❖ **Contributing to the IMO policy**
- ❖ **Korean IT technology being utilized in other APEC economy**

Conclusion

Future plans

- ➢ **Adding automatic analyzing functions for potentially dangerous elements (crew, passenger, cargo, ship and port)**
- ➢ **Protecting shipping company and personnel property information**
- ➢ **Upgrading GICOMS to maritime safety portal site**
- ➢ **Promoting international cooperation**

Consideration points of VMS/GICOMS

- ➢ **Choosing ship's terminal according to communication range and cost**
- ➢ **Calling for inter-organizational cooperation for interfacing DB**
- ➢ **Reserving backup for connecting other DB in the future**