

**The Implementation of STCW78/95 in China and its
Effect on the Chinese Seafarers' Education and Training**
Li Zhonghua
(Zhuhai Maritime Safety Administration)

I. Introduction

Since STCW78 Convention went into effect on April 28, 1984, it has helped to generally improve the international seafarers' qualities to some extent and also contributed to protecting the ocean environment as well as ensuring the safety of persons and possessions. However, the Convention becomes less effective with the development of the international shipping business and the improvement of the shipping technology. People hoped that the enforcement of the Convention would guarantee the competence standards of seafarers, especially the advanced ones, and the shipping safety through seafarers' devotion to the post, but they have noticed that the "Maritime Bible" failed to live up to their expectations. In this case, the Convention needs thoroughly amending.

II. Thorough Amendments to STCW Convention

With STCW78 widely accepted, it becomes less trusted by the people. As the Convention's standards, especially those technical items, are not accurate, it can only "satisfy the responsible institutions" after being translated and understood by the contracting countries. For the lack of restrictions, many contracting countries have not strictly implemented the Convention and the seafarers' competence standards certificates issued by the contracting countries according to STCW78 Convention failed to be a proof for their corresponding capabilities. Other factors weaken its effectiveness as well. For example, the Convention only stipulates the least maritime experience and the specialized knowledge, while neglecting a seafarer's skills and competence. In fact, the number of the ship's crew, the shift-changing frequency, the crewmen's different nationalities with their different cultural and educational backgrounds all have an influence on the seafarers' training and their competence standards.

Since the end of 1970s and the beginning of 1980s, the shipping business, affected by the world economy, especially by that of the western countries, has entered a stage of depression; the structure of the world shipping teams, the ships' management and the crewman-providing conditions have also changed greatly, with the shipping teams of the developing countries increasing and those of the traditional maritime countries decreasing; the sources of seafarers have become different, too. Since entering the 1980s, the proportion of the seafarers exported from the Asia has risen sharply, mainly to the

Philippines, India, Indonesia, Burma, China and other countries. Frequent maritime accidents are caused by the fact that the seafarers have radically increased with their qualities neglected and other problems related to the training, examination and certification unsolved. Some serious international perils of the sea during recent years taught us such a lesson that we must not underestimate man's important role.

Finding itself in a tight corner, IMO resolved to amend STCW Convention in an all-round way. Only two years had passed when a complete amendment to STCW78 was carried out, for IMO adopting some special methods, such as increasing conferences, simplifying procedures, and so on. After the step of "acquiescence and acceptance" taken, the amended Convention met the demand of coming into force on August 1, 1996 and was actually put into effect on February 1, 1997. The Transportation Ministry of the PRC issued a formal notice on January 24, 1997 that the Convention would become effective as from February 1, 1997.

The amended STCW78/95 approved by the plenary session of the contracting countries in 1995 merely retained the main body of STCW78, renewing and enriching the supplementary articles to several times. STCW78/95 becomes more operable with a reasonable organization, stressed key points and detailed contents.

Compared with the former one, STCW78/95 has been adjusted reasonably in its structure and supplemented with many new contents as follows:

1. There will be complete, strict and overall observance review mechanism of the regulations, including the supervision over the competent authorities of the contracting countries, the examination of the port country of the related ships and their crewmen and the supervision over the certification to seafarers as well.
2. Seafarers' actual skills will be strictly cultivated, developed and assessed. They have to receive systematic professional education and training.
3. Quality standard system will be set up for seafarers' training, examination, assessment and certification under continuous quality control.
4. The "Functional Certification" is introduced and reorganization of the traditional system of the posts on board is permitted to suit the modern automation requirements of ships.
5. Mandatory simulator-based training will be added.
6. The management and application of certificate revalidation will be rigorously enforced.
7. Seafarers should strictly observe the principles and requirements for maintaining a proper and secure watchkeeping on varied conditions.

III. The Implementation of STCW78/95 in China

STCW78 Convention is among the most important ones stipulated by IMO and

involves 137 contracting countries up to now, of which China has been a member, for our government submitted the document of approving it on June 8, 1980.

Being a signatory state, China attaches great importance to the implementation of STCW78 in the country. Soon after the Convention being put into effect, the Harbor Superintendency Administration of the PRC fixed the working goal that the four basic safety training of all the crewmen on the ships of 200-tonnage and over, and their certification should be completed in five years; besides, it published the related regulations and training schemes that by the year 1987 the crewmen working on the ships of 200-tonnage and over will have received the seafarers' four-itemed professional training and obtained the training certificates which are signed and issued by the Harbor Superintendency Administration. In 1985, the Administration promulgated the way of "Service Register for Ship's Crew" and over one year later, more than 300,000 crewmen had gained the Service Register, which is used to record the crewmen's service experience on board and their training conditions, and to help the competent authorities to know well and manage the crewmen's professional work. On January 1, 1988, the Examination and Certification Rules for the Seafarers of the PRC", based on the stipulations and demands of STCW Convention, came into force; hereafter, a series of other stipulations and technical standards were issued, and the seafarers on both Category A and B ocean ships were required to taken the unified examination for competence standards certificates. In 1992, the "Examination and Certification Rules for the Inland-water Sailors" was published too. All these steps taken showed that our country's administration, training and certification of ships' crew had met the international demands and STCW78 had already got enforced completely.

Towards the overall amendment to STCW78, the Chinese responsible institution of maritime affairs also took a very active and supporting attitude. To make sure the amended Convention (i.e. STCW78/95) is implemented thoroughly and effectively in China, the related units and staff, the maritime institutes and large shipping businesses, under the leadership of the Transportation Ministry, put up a tough battle for implementing the Convention. The implementation can roughly be divided into three stages. First, to study, understand and accept the Convention; Second, to thoroughly amend and enrich the stipulations, standards and technical documents concerning our seafarers' training, assessment, examination, certification and post requirements; Third, to put the Convention into effect.

During the period of thoroughly investigating and correcting STCW Convention, our country's maritime responsible institution undertook to translate and print large number of documents and materials concerning the correction of the Convention, and convoked different kinds of symposiums to greet the amendment. Just after the approval of STCW 78/95, the Harbor Superintendency Administration summoned technical personnel to translate it and published the Chinese version of STWC 78/95 together with the English

original in June, 1997.

Since the implementation of STCW 78/95 Convention in China, our country has gradually made a whole set of management laws and technical standards on ship crewmen's training, examination and certification, and the requirements of the Convention has got fully embodied in the maritime institutes' syllabuses.

After STCW 78/95 was approved, the responsible institution started immediately with the complete amending of China's regulations and standards, and the maritime institutes also began to adjust the speciality arrangements and revise the syllabuses to satisfy the new and higher demands from the amended Convention. In April of 1995, the Harbor Superintendency Administration of the PRC (now called the Maritime Affairs Bureau) set a special STCW 78/95 Implementing Committee, which consisted of the country's harbor superintendency administrative officials and some experts and staff who study STCW Convention and its implementation in China. In November 1996, ten experts were appointed to form the Implementation Working Team to speed up the implementation of the Convention. Meanwhile, the Chinese Maritime Teaching Direction Committee was established to take on the responsibility of adjusting and formulating the maritime education policy for the Chinese seafarers, drawing up syllabuses and working out new teaching materials in accordance with the Convention.

By the end of 1997, a whole set of ship crew's management regulations, standards and technical documents which helped to fully implement STCW78/95 had been mapped out with the efforts of the maritime administrative institutions at various levels, the maritime institutes and the concerned businesses. This set of documents can be categorized as follows:

- 1.The laws and regulations concerning the implementation of STCW78/95, which are completely difference from the former ship crew's management stipulations issued by the institutions lower than the Ministry level. On October 20, 1997 the Transportation Ministry promulgated No.11 Decree of the "Post Regulation for the Seafarers of the PRC", and on November 5 of the same year, No.13 and No.14 Decree were issued respectively, namely, the "Competence Standards Examination, Assessment and Certification Regulation for the Seafarers of the PRC" and the "Training Management Regulation for the Seafarers of PRC". These three regulations, based on the national condition of China, have completely satisfied or even surpassed the needs of the Convention. They also include new contents of assessing the seafarers' competence standards, appointing their education and training institutions, and demanding the examination and certification departments to set up the quality system.

- 2.The training, examination and certification procedures and training program, stipulated according to the 5th and 6th Chapters of STCW Convention. The seafarers' training involves professional training and special training, about which the Maritime Affairs Bureau of the PRC has mapped out the corresponding training essentials, and

made detailed stipulations on training institutions' ground, equipment, teaching materials and teachers as well as the training curriculum, quality supervision, examination, certification and so on.

3. The crews' examination outline and assessment sketch formulated according to the 2nd, the 3rd and the 4th Chapters of the Convention and the "Radio Regulations" by the International telecommunications Union.

4. The teaching plan and syllabus designed for the maritime colleges by the maritime education responsible institutions.

Based on the requirements of the Item VI of STCW, the Rule A-1/7 of the supplementary articles and the Section A-1/7 of STCW, the People's Republic of China delivered the English version of the 700,000 word implementation document to the IMO by the Chinese Embassy in the United Kingdom on November 10, 1997. The IMO appointed a five-member expert teams for inspecting this document and summoned an inspecting conference by the expert teams in Tokyo, Japan, to which the Transportation Ministry of China sent a delegation to answer the related questions. As one of the contracting parties submitting the implementation document earliest and the first country passing the inspection, China had basically completed the renewing and perfecting work of the regulations, standards and technical documents for implementing STCW78/95 Convention.

Thoroughly renewing and perfecting our country's ship crew management regulations, stipulations and technical standards aims at effectively and fully implementing STCW78/95 Convention in China. According to the Rule I/15 of the Convention, the deadline for the overall implementation of STCW78/95 Convention falls on February 1, 2000. It is estimated that there are more than 380,000 seafarers in China, including about 140,000 captains and advanced seafarers, so it is a hard job to demand all the seafarers to come up to the new standards in less than 2 years. Although the work of the advanced seafarers' new knowledge studying, the special training for the holders' of different certificates, and the strengthened electric course for the engineers has been started and made great progress, there is still a long way to go to ensure all the seafarers in our country to obtain the corresponding certificates required by STCW78/95 Convention since February 1, 2002.

IV. The Importance of the Overall Implementation of STCW78/95 to the Seafarers' Training Administration in China

The amended Convention has brought about new concepts, demands, standards and approaches for the seafarers' training and administration and is bound to greatly affect the seafarers' training and administration in our country, too.

1. Devoting major efforts to reform the seafarers' education and training mode in

China through the implementation.

The navigation is a special kind of profession, so a qualified seafarer should not only be physically strong, knowledge-abundant and professionally skilled, but also need the capacity of being adapted to the environment, the fine psychological qualities and the ability to handle the eventualities. At present, our country's maritime education only values the theoretic knowledge but neglects the practical skills, so the shipping circles get such a impression that the related institutes become far and far away from the "maritimeness" because of lacking their characteristics. Therefore, it is necessary for the maritime institutes and their responsible institutions to take STCW78/95 into careful consideration and thoroughly reform the seafarers' education and training mode on the basis of the features of maritime specialities.

Firstly, to be clear about the cultivating goal. The maritime specialities in the related institutes should define its orientation by fostering the students' qualities needed to be seafarers. Among the seafarers' qualities, primary importance should be attached to the devotion for the working-post.

Secondly, to heighten the cultivation of practical skills. As a special kind of professional education, the maritime education should devote much attention to operating capabilities besides sound theoretic knowledge. To a seafarer, especially the one at the management level, it is essential to be capable of solving technical problems independently.

Thirdly, to value the cultivation of the comprehensive abilities. Here, the comprehensive abilities refer to not only the problem-solving ability by using one's theoretic knowledge and operating ability, but also the leading ability, decision-making ability, judging ability, adapting ability, foreign language using ability, communicating ability and so on.

Fourthly, to learn from foreign maritime institutes for their seafarer-training style. It is known that some foreign crew management companies prefer the collegiate graduates to the undergraduates for their crew, because the undergraduates with their knowledge learned by four-year-study, are liable to take up the land jobs, thus ending their maritime careers. On the other hand, the collegiate graduates can continue to finish the university study after working at the operational level several years and resume their work on board at the management level. There is much in their method that we can make use of.

2. Trying to attract the country's and businesses' investment in seafarers' education and training by taking the chance of implementation.

Being short of educational funds is a common problem facing nearly all the higher education institutes. It is no exception to and even worse with the maritime institutes. "The Outline for the Education Reform and Development of China" has determined that by the end of the 20th century, 4 percent of the GNP should be set aside for the financial education allocation by the country, which will reach the highest level in history; however,

the figure is far less than that of a developed country (for example, 10 percent in America) and education will still be in straitened circumstances. The process of implementing the Convention implies the survival of the good with the elimination of the bad, the improvement of equipment and personnel's qualities, the satisfaction of the international requirements, and more important, the development and progress; therefore, our country's maritime institutes and training organizations should take the chance to raise funds, improve teaching conditions and attract capable staff so that the maritime education and seafarer training can reach a higher level. In addition, we should try to invite the investments from foreign ship-owners and related businesses for training seafarers.

3.To completely heighten the Chinese seafarers' position in the international maritime circles through the implementation.

China ranks among the largest maritime countries, with the general shipping capacity being the ninth and the container shipping capacity being the fourth in the world; however, she is not a strong one nor a country with the highest seafarer export, though there are about 380,000 seafarers. It is estimated that there are roughly 1,250,000 seafarers in the world: 400,000 of them are at the advanced level while the others at the common level; on the other hand, altogether 450,000 advanced seafarers plus 600,000 common ones are needed. According to the investigation by the International Shipping Union, 32,000 advanced seafarers are lacked at present in the world and the figure will amount to 42,000 by the year 2005. With the implementation of STCW78/95, the situation will change sharply.

The seafarer export is a promising market, but China's share in the market is far from satisfaction, which mainly results from the fact that our seafarers' qualities need improving in the following aspects:

- a. The foreign language proficiency. Those common seafarers can hardly communicate with foreign colleagues on board, hindering their ordinary lives and work;
- b. The practical operating skills. As previously stated, our seafarers' education and training mode accounts for their poor practical skills;
- c. The post-devotion spirits and service awareness. Since our seafarers have received the education of "being the master" for quite a few years, they, after being sent abroad, are short of a sense of service awareness, especially the obedience awareness, so they can hardly adapt themselves to the environment of being employed, which may annoy their employers;
- d. the arrangement of the speciality education. Our maritime specialities have been the traditional ones related to the ship-piloting, engine, communications and shipping electricity, so the cultivated crewmen cannot suit the needs of the shipping modernization without subsidiary abilities besides one leading ability.

The implementation of STCW78/95 in China has created favorable conditions for

the Chinese seafarers to advance towards the outside world. So long as we manage to get over the above-mentioned problems by proper remedies and strengthen the reform to meet the demands from the Convention, our seafarers are sure to obtain a due standing in the international maritime circles with their good image and high reputation.

4. To perfect the crewmen's administrative regulations system in China through the implementation.

After three years' efforts, the crewmen administration regulations and standards system is established in our country, which is the guarantee of orderly work of crewmen's education, training, examination, assessment and certification. By the end of 1997, the related regulations and standards had surpassed twenty in our country, some originating from our crewmen's administration experience over a long period of time while others from STCW Convention. These regulations and standards are characterized by its wide coverage, high operability and systematicness, conforming to and even exceeding the requirements from the Convention, but there still some problems to be solved:

a. A specialized crewmen's administrative regulation at a higher level is needed. The present regulations are confined to the orders by the Transportation Ministry and the documents issued by the Maritime Affairs Bureau. Though the responsible institution started the preparations for making a crewmen's law over ten years ago, its good wish has not come true yet and we are still expecting a special regulation by the highest administrative department;

b. The generalized regulation system is unlikely to take into consideration of the actual conditions of different regions in our country, thus making it difficult to enforce the regulations strictly. Therefore, we should take the features of different places of the country into account and give a free hand to the local administrative organs in executing rules and regulations, with the highest responsible institution keeping close supervision and management.

Fully implementing STCW78/95 Conventions involves a large-scale campaign for the world maritime circles. IMO has decided to publish a "white name list" of the contracting countries that abide by the Convention and at the same time to adopt regressive measures towards the seafarers from those contracting countries that break the Convention. It is believed by the author that each of the large maritime countries will do its utmost to be included by the "white name list" and they will succeed in it sooner or later. Shaping good image of the seafarers in the world maritime circles depends on the overall improvement of their qualities.

Korean National AIS Project

Dr Se-Won KIM

Dr Jin-Soo PARK

Captain Ihl HUGH

College of Maritime Sciences

Korea Maritime University



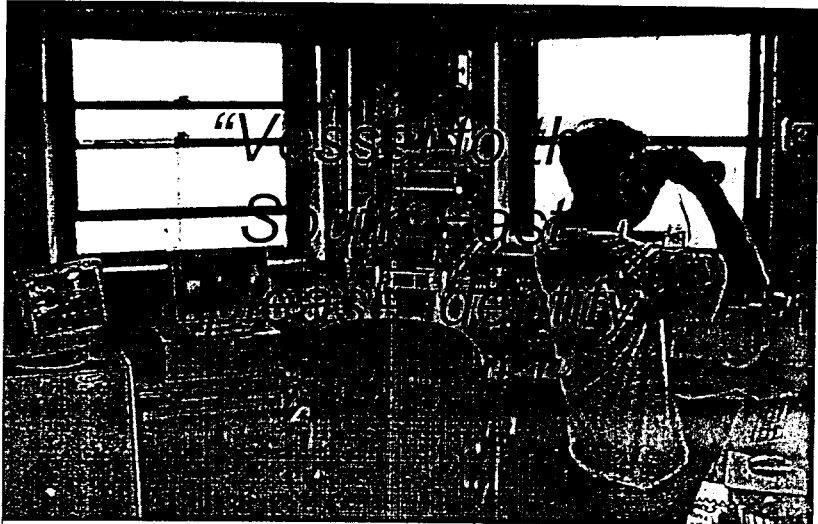
*The Korean Institute
of Navigation, KIN*

Presentation Content

- Background
- Description of Universal AIS
- Shore Network (Plan)
- Applications for Universal AIS
- Further Consideration



*The Korean Institute
of Navigation, KIN*



*The Korean Institute
of Navigation, KIN*

AIS - background

- A need for identification and better situation awareness in many areas
- DSC-transponder (GMDSS), with limited functions, not approved by IMO
- New techniques with new possibilities
 - GPS/DGPS
 - ENC/ECDIS
 - Self-Organised TDMA



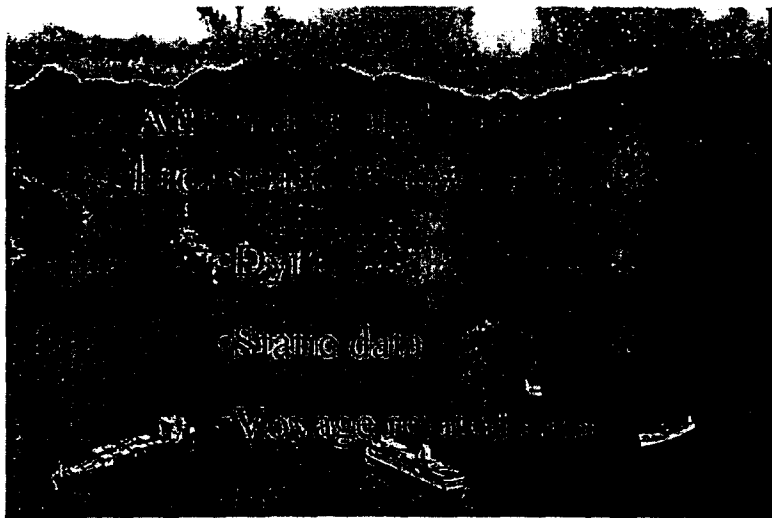
*The Korean Institute
of Navigation, KIN*

AIS - basic idea

- Broadcast own ship data to other ships and shore stations
- Receive information from other ships and shore stations
- Use of an autonomous organisation method for the transmissions
- A cellular concept for an effective use of the frequencies



*The Korean Institute
of Navigation, KIN*



*The Korean Institute
of Navigation, KIN*

Dynamic data

- Position (latitude/longitude in WGS 84)
- Course and speed over ground
- Heading
- Rate of turn
- Navigational status
- Position accuracy



*The Korean Institute
of Navigation, KIN*

Dynamic data

Report rate

<u>Speed (knots)</u>	<u>Update rate</u>	<u>Increased rate</u>
0 - 14	12 seconds	4 seconds
14 - 23	6 seconds	2 seconds
23 +	3 seconds	2 seconds
At anchor	180 seconds	

Increased rate when ship turning more than 10 degrees/min.



*The Korean Institute
of Navigation, KIN*

Static data

- MMSI number
- IMO Number
- Name of the ship
- Call sign
- Length and Beam
- Type of Ship
- Location of the GPS antenna on the ship



*The Korean Institute
of Navigation, KIN*

Voyage related data

- Ships draught
- Type of cargo
- Destination
- Estimated time of arrival
- (Waypoints)
- (Number of persons on-board)

*Voyage and static data are updated once every 6 minutes or
on request (interrogation)*



*The Korean Institute
of Navigation, KIN*

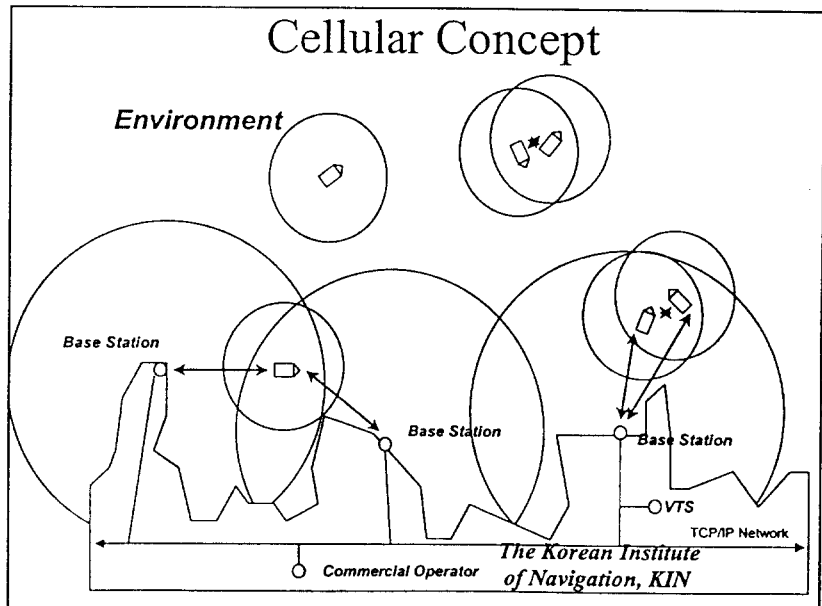
Text and Binary data

- Broadcast and point-to-point messages for application specific purposes.
- In point-to-point transmissions, the receiving station responds with an ACK.
- Short message communication between vessels or vessel to VTS or vice versa

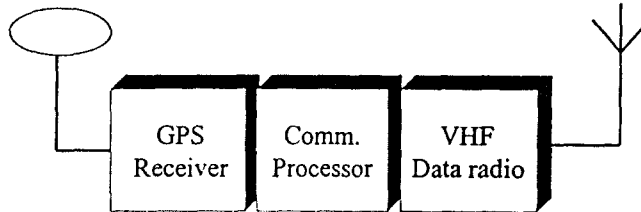


*The Korean Institute
of Navigation, KIN*

Cellular Concept



The AIS transponder



GPS Receiver

- Synchronization
- Position
- Speed Over Ground
- Course Over Ground

Comm. Processor

- Access VHF data link
- Pack information
- Unpack information
- Control

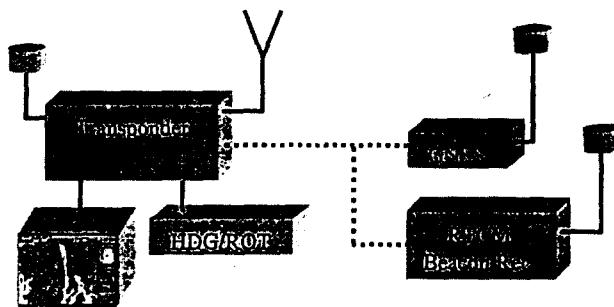
Radio Unit

- Transmit Data
- Receive Data



*The Korean Institute
of Navigation, KIN*

Ship Installation

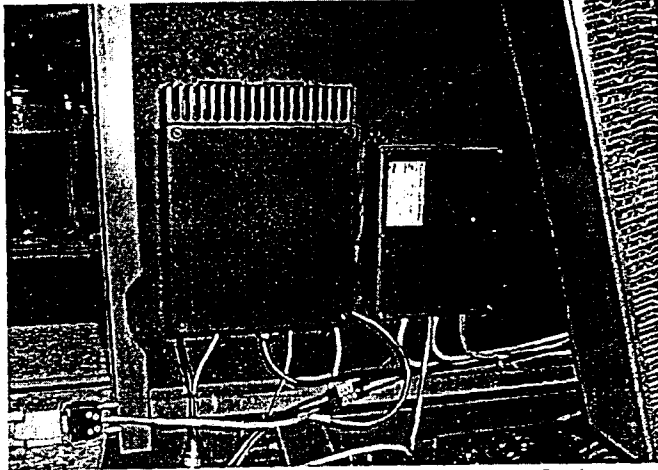


ECS



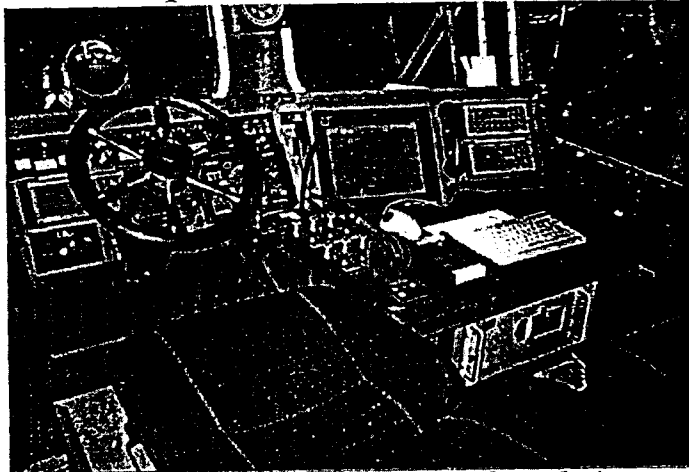
*The Korean Institute
of Navigation, KIN*

Ship installation of AIS



*The Korean Institute
of Navigation, KIN*

Ship Installation of AIS



*The Korean Institute
of Navigation, KIN*

Applications of AIS technology

- Ship-to-ship for collision avoidance
- For littoral states to obtain information about ships and its cargo
- As a VTS tool
- Broadcast of differential corrections
- Search And Rescue (SAR) purpose



*The Korean Institute
of Navigation, KIN*

Applications of AIS technology

- Fleet Management
- Supervision of Aids-to-navigation
- Sending Weather data
- Broadcast of Navigational warnings
- Port Management



*The Korean Institute
of Navigation, KIN*

Benefits of AIS

- Real time tracking and identification of AIS equipped ships on the ECS/ECDIS display regardless of weather situation
- Awareness of vessels behind islands or river bends



*The Korean Institute
of Navigation, KIN*

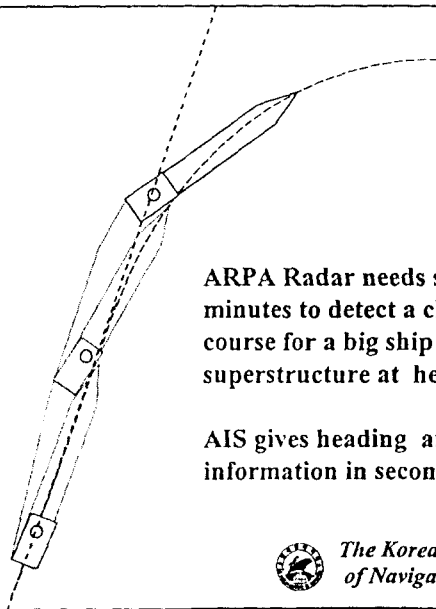


Benefits of AIS

- Real time tracking and identification of AIS equipped ships on the ECS/ECDIS display regardless of weather situation
- Awareness of vessels behind islands or river bends
- Information about change in course over ground, heading and speed of ships in real time



*The Korean Institute
of Navigation, KIN*



ARPA Radar needs several minutes to detect a change of course for a big ship with her superstructure at her stern.

AIS gives heading and ROT information in seconds



*The Korean Institute
of Navigation, KIN*

Benefits of AIS

- Real time tracking and identification
- Awareness of vessels behind islands or river bends
- Information about change in course over ground, heading and speed of ships in real time
- Broadcast of weather and navigational warnings
- Short message Service



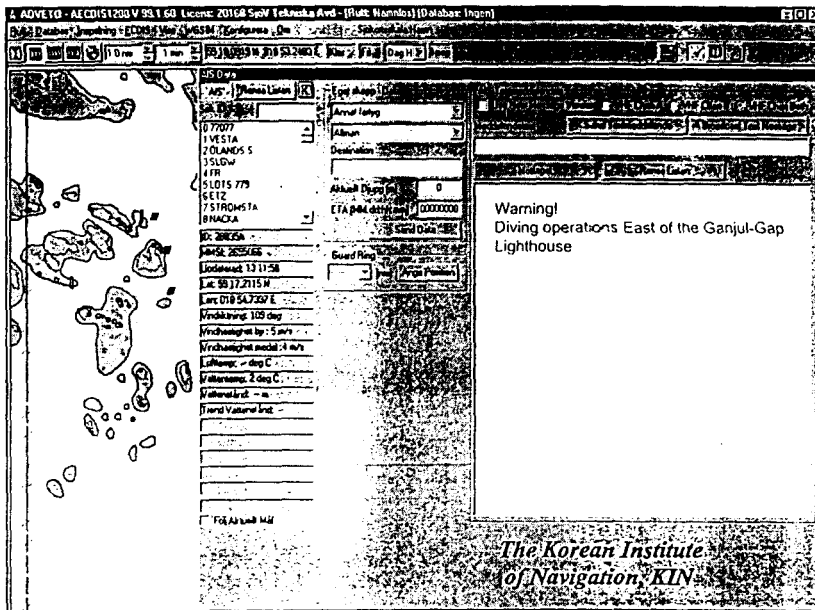
*The Korean Institute
of Navigation, KIN*

Aids to Navigation

- Position of AtoN
- Status of Lights
- Status of Racon
- Position Indicator
- Local parameters



*The Korean Institute
of Navigation, KIN*



Benefits of AIS

- Real time tracking and identification
- Awareness of vessels behind islands or river bends
- Information about change in course over ground, heading and speed of ships in real time
- Broadcast of weather and navigational warnings
- Short message Service
- Broadcast of DGPS corrections



*The Korean Institute
of Navigation, KIN*

AIS benefits summary

- More information available
- Reduced need for voice communication
- Improved man-machine interface
- **Improved situation awareness!!!**



*The Korean Institute
of Navigation, KIN*

AIS as a source of information for administrations

- With a network of AIS base stations on shore information is captured automatically
- AIS is one source of information for a VTMS - Vessel Traffic Management Information System
- Identity, size, type of ship, type of cargo
- ETA and destination



*The Korean Institute
of Navigation, KIN*

AIS base stations (Plan)

- Entire Korean coast covered
- About 30 Base Stations
- Control Centres
 - * PTMS
 - * Coastal VTC
- Pilot test (2001)



*The Korean Institute
of Navigation, KIN*

Base Stations

- Basic Idea : Joint Operation of KT sites
- Matters into Consideration
 - * Service Area
 - * Tower
 - * Blind Sector
 - * Power & Communication Lines



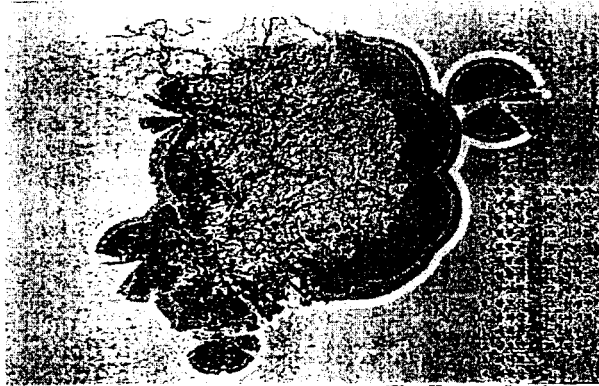
*The Korean Institute
of Navigation, KIN*

Present VHF Sites (13 sites)



*The Korean Institute
of Navigation, KIN*

Expansion Plan (1st – 26 sites)



*The Korean Institute
of Navigation, KIN*

Expansion Plan (2nd – 29 sites)



*The Korean Institute
of Navigation, KIN*

Distribution of AIS Information

- PTMS (Port Traffic Management System)
 - * *Regional VTS & Port management*
- Coastal VTS centre in future
 - * *Coastal VTS*
- RCC
 - * *Search and Rescue*
- Shipping Company
 - * *Fleet management*



*The Korean Institute
of Navigation, KIN*

AIS as a VTS tool

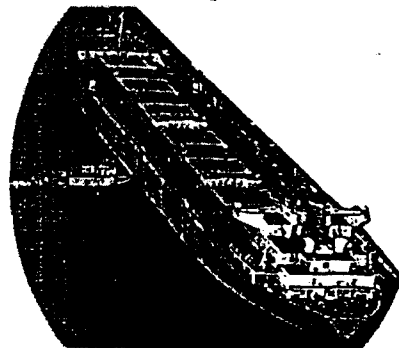
- Vessel ID and other information are automatically displayed on the VTS Display.
- Problems related to radar systems, such as radar target swapping and degradation due to weather, are non-existing
- More information such as rate of turn, heading, and ship dimensions is available.
- Transponder targets can generally be received from positions where radar signals can not reach.



*The Korean Institute
of Navigation, KIN*

Portable AIS Transponder

- “Portable AIS” containing a PC with Electronic Charts and AIS Transponder
- The VTS Controller can communicate with the Pilot over the datalink.
- Communicate with Tugs using AIS



*The Korean Institute
of Navigation, KIN*

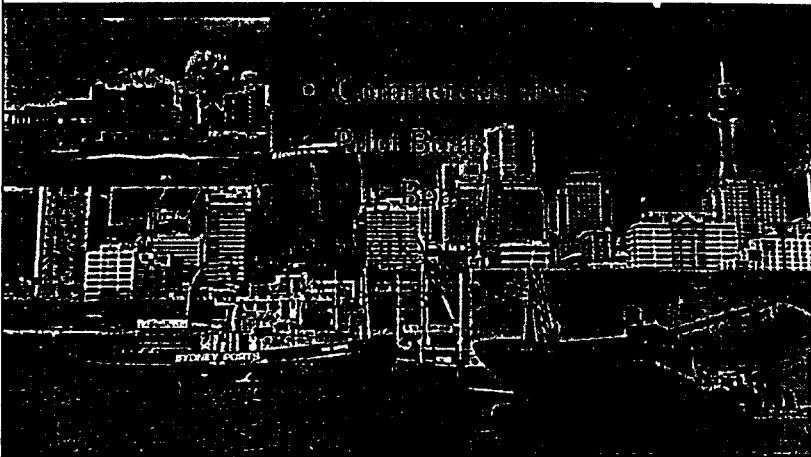
Benefits for the VTS Operator

- Real time tracking and identification
- Data logging
- Awareness of vessels behind islands or river bends
- Automatic viewing of extensive ship data by connection to Ship database server.
- Fleet management of pilots boats, tugboats and other port vessels can be made more efficient.
- Exchange of text messages, (silent communication)

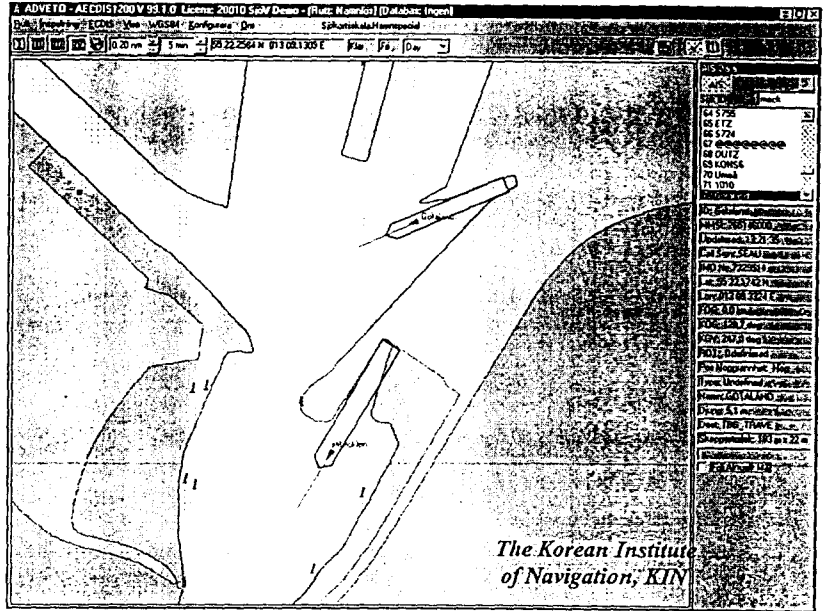


*The Korean Institute
of Navigation, KIN*

Port Management



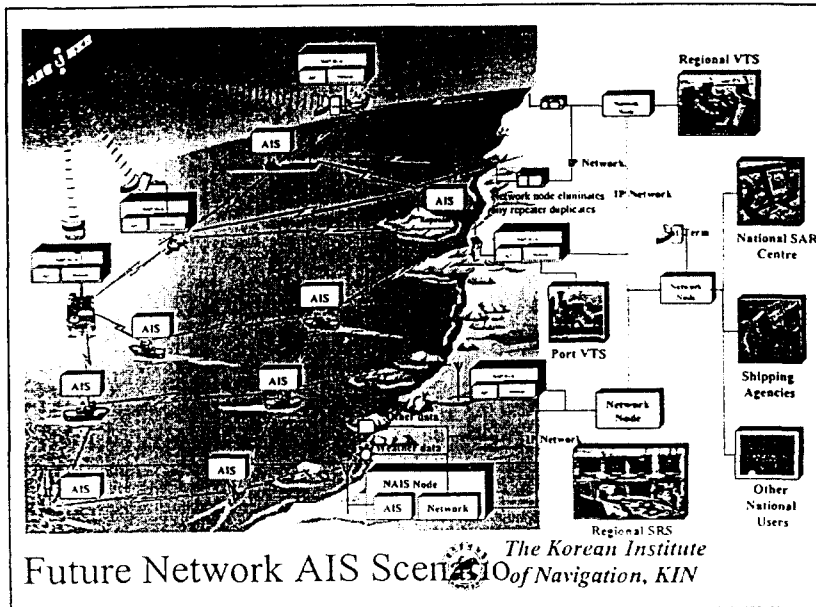
*The Korean Institute
of Navigation, KIN*



Fleet Management

Cargo vessels

The Korean Institute of Navigation, KIN



Summary

Universal AIS technology is effective and could enhance navigational safety

- The AIS provides an improved method of vessel traffic surveillance
- Complement to radar in collision avoidance
- Invaluable in Search And Rescue operations
- Reduce voice communications
- Effective Fleet management



The Korean Institute
of Navigation, KIN

AIS standardization

- Carriage requirement in SOLAS Ch. V
- Drafted by IMO NAV 45 Sept -99
- Approved by IMO Maritime Safety Committee May -00.



*The Korean Institute
of Navigation, KIN*

AIS - Drafted carriage requirement

- AIS on all new passenger ships and new cargo ship above 300t constructed after 1 July 2002
- Passenger ships and tankers on int. voyage, 1/7 2003
- Cargo ships above 50 000 t, int. voyages, 1/7 2004
- Cargo ships 10 000 - 50 000 t, int. voyages, 1/7 2005
- Cargo ships 3 000 - 10 000 t, int voyages, 1/7 2006
- Cargo ships 300 - 3000 t, int voyages, 1/7 2007
- Ships >300 t, not in int voyages, 1/7 2008



*The Korean Institute
of Navigation, KIN*

AIS standardization

Carriage requirement IMO		
Frequencies ITU WRC	Technical Characteristics ITU-R	Teststandard IEC
Performance standard IMO		



*The Korean Institute
of Navigation, KIN*

Installation steps(Korean)

- 2000. 7. 1 : New ships (?)
- 2003. 7. 1 : 35 (5 pass. + 30 tanker)
- 2004. 7. 1 : 24 (24 cargo)
- 2005. 7. 1 : 78 (78 cargo)
- 2006-2007: 233 ships (pass+ cargo+tanker)
- 2008. 7. 1 : 438 ships (Non-int.)
- About 808 ships



*The Korean Institute
of Navigation, KIN*

Time Schedule of AIS Project

- 2000. 4 – 2001. 4 : Design of AIS Network
- 2001. 3 – 2001. 12 : Stage 1 (Pilot test)
(Pusan or Incheon area)
- By 2002. 6: Shore network
- July 2002 : Full operation



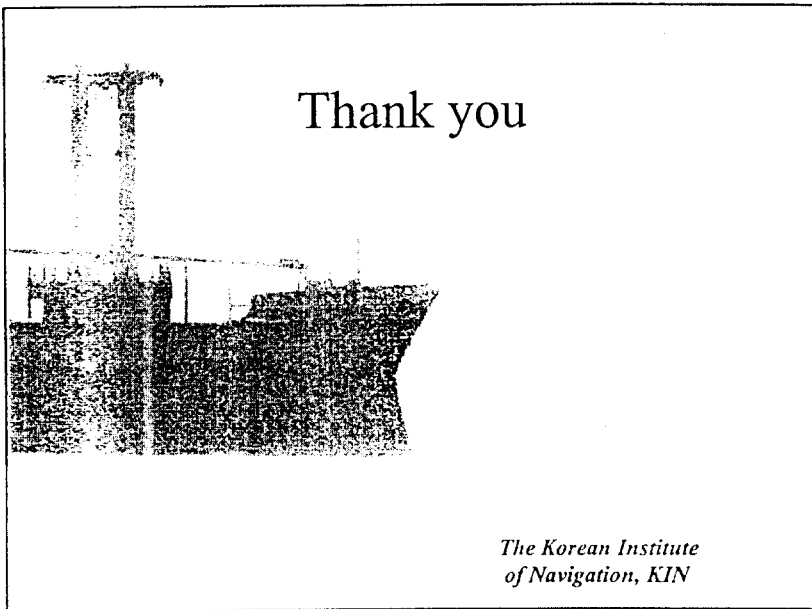
*The Korean Institute
of Navigation, KIN*

Further Consideration

- Packaging and Distribution of AIS information to various parties
(*PTMS, Coastal VTCs, RCCs, Ship Operators, etc.*)
- AIS/ECDIS/VTS Interface



*The Korean Institute
of Navigation, KIN*



Thank you

*The Korean Institute
of Navigation, KIN*