

A Study on the measure to meet the increasing voyage between North and South Korea

Mr. CHUNG Se-Mo, KIN

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1. The status and prospect of the voyage between North and South Korea

There were seldom traffics through sea routes between North and South since the Korean war of 1950 ~ 53, until 1980 when five cargo ships of the North Korea transported grains to South for the victims of flood disaster of the South Korea.

At that time, a brief and rough knowledge of the situations of North Korean maritime affairs are revealed to the south, such that their principal navigational equipments are RADAR, Gyro Compass and Zikada receiver.

After cut-off again of sea traffic for several years, it is reopened since April of 1997 and, it increased steeply up to seventy voyages per year in 1999, mostly for the KEDO project, sight-seeing cruise, together with two container liner services.

A further increase of these sea traffic is expected in the near future, encouraged by the summit conference of last May between North and South. This paper deals with the measures of aids to navigation and maritime communication system for the problem to be solved, to assure for the safety of navigation.

The measures are focused on those which may be solved by the effort of South

Korea alone.

2. Status and issues to be solved for the Visual Aids to Navigation

Visual Aids to Navigation in North Korea are of little quantity compared to the length of coast-line as shown in Table 1, but South Korea alone can do nothing for this matter.

Table 1. The number of Visual Aids to Navigation in North and South(1999)

	South	North	Total
Number of A to N(Buoy)	1775(110)	121(13)	1896(123)
Percentage	93.6(89.4)	604(10.6)	100(100)

Another vital issue is that North and South Korea is adopting different buoyage system, such as North Korea of A system and South Korea of B system in IALA Buoyage System of 1980. Though this difference is concerning only the lateral buoys, the color of light and buoy surface is opposite to each other as shown in Figure 1, and it may cause danger for the safety of ships, especially for rather small ship which is excepted from the obligation to get a pilot on board.

Thus, the author strongly suggested to our government to change the buoyage system of South to A-system, the same as those of China, Russia, North Korea and Vietnam.

3. Status and issues as to the Radio Aids to Navigation

At moment, South is operating 1 Loran-C chain(GRI 9930, composed of Pohang, Kwangju, Gesashi, Nijima and Ussurisk stations), 8 DGPS stations, 58 racon stations, while North is operating(not ascertained) only 3 radio beacon stations in the west coast(Ihwari, Monggumpo and Onjongri transmitting in a common frequency

of 282kHz by time division). Korean Loran-C chain is designed to cover whole coast of Korean peninsula and so no problem to serve for North Korean sea-area as shown in Figure 2, except the intermittent off-air of the Ussurisk station at moment.

To allow the DGPS service for the North, the author recommended to our government to establish additional DGPS stations in Backryong-do(most northern part of west coast) and in Kosung(most northern part of east coast) respectively, having coverage of 100 nautical miles.

By doing so, more than 70 percent of west coast of the North may be covered with DGPS service(remaining part may be covered by Dasanshan station of China) and more than 40 percent of the east coast may be also, as shown in Figure 3.

Racon is a short-range system and so South can do nothing for North at present stage.

4. Status and issue to be solved for NAVTEX service

North and South Korean coasts belong to the same NAVAREA XI of GMDSS system.

South Korea is operating 2 NAVTEX stations on the east and west coasts respectively with coverages of 200 nautical miles covering whole South coast and less than 20% of the North coast, while North Korea has no NAVTEX station.

The author strongly suggested our government to expand the coverage of existing NAVTEX stations up to 400 nautical miles, as shown in Figure 4.

5. Conclusion

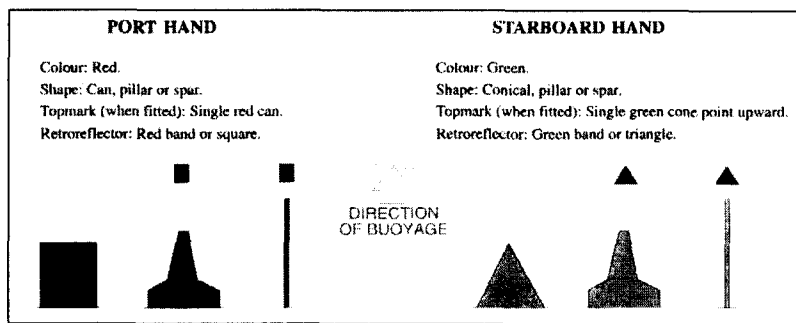
To cope with the increasing sea traffics between North and South Korea, three essential countermeasure is studied and recommended to the government of South Korea as follows.

1. The Buoyage system of the South Korea be changed from B to A System of the IALA Buoyage System.
2. Two additional DGPS stations be provided on the northern-most parts of the east and west coast of South Korea respectively.
3. The service areas of two Korean NAVTEX stations be expanded up to 400

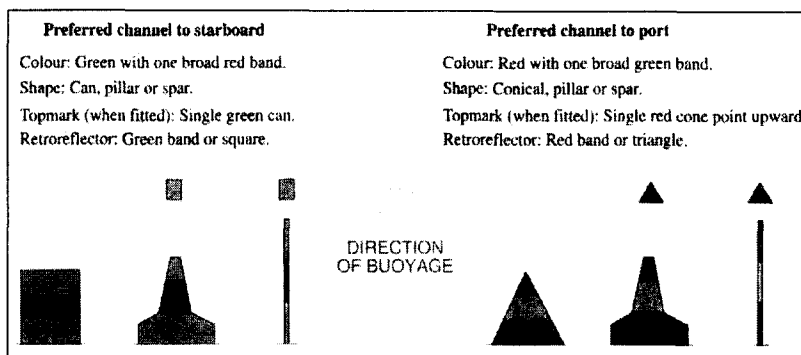
nautical miles.

Finally the author asks with courtesy to the friends, especially Chinese friends here to help me to get the data of the North, especially an up-to-date light-house table of the North Korea for my further studies, as the data quoted here are obtained indirectly from Defence Mapping Agency tables of USA and Admiralty tables of the United Kingdom.

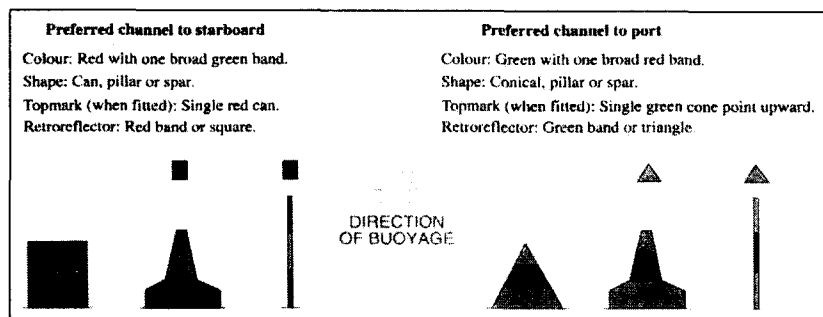
Lateral Buoy Region A



Lateral Buoy Region B



Preferred Channel Buoy Region A



Preferred Channel Buoy Region B

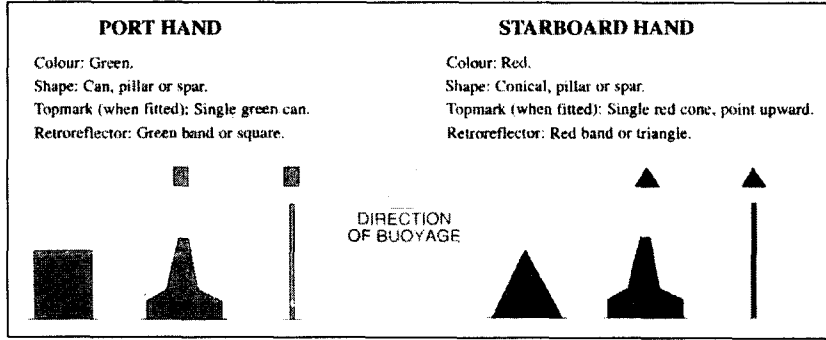
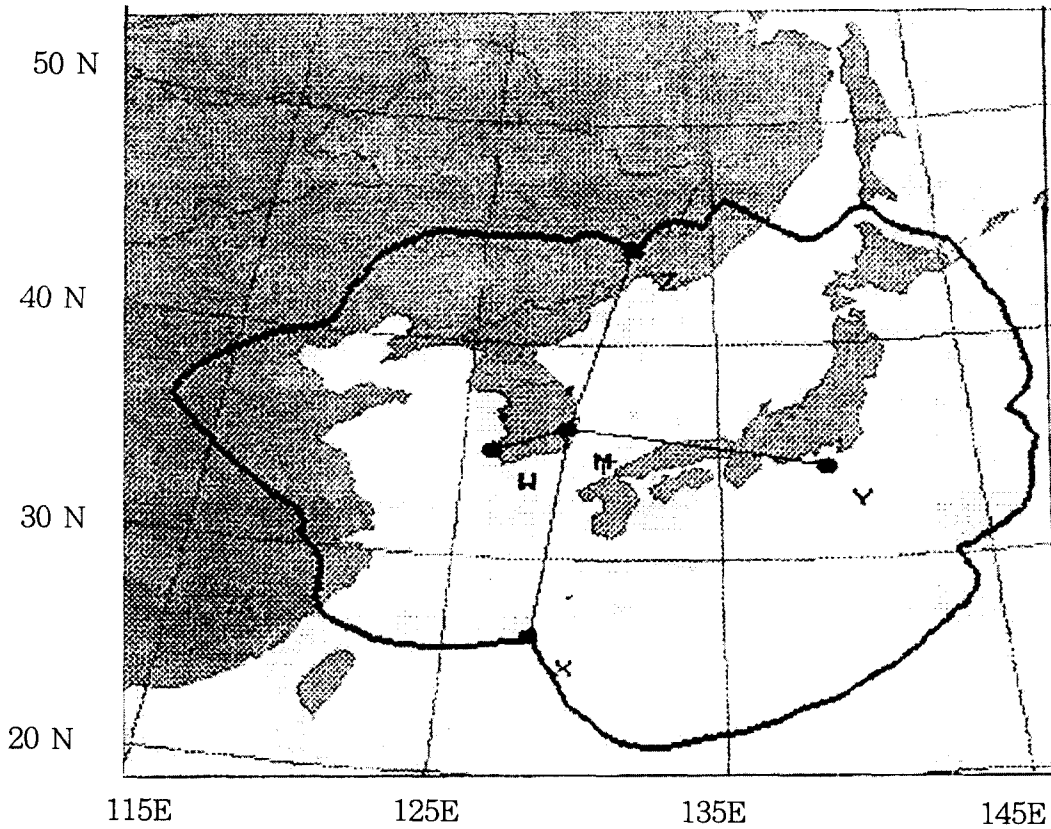


Fig. 1. Lateral buoys of A and B system respectively

Expected Coverage of Korean Chain (9930)



(LORAN-C CHAYKA Cooperative Chain)

Fig. 2. Coverage of Korean Loran-C chain

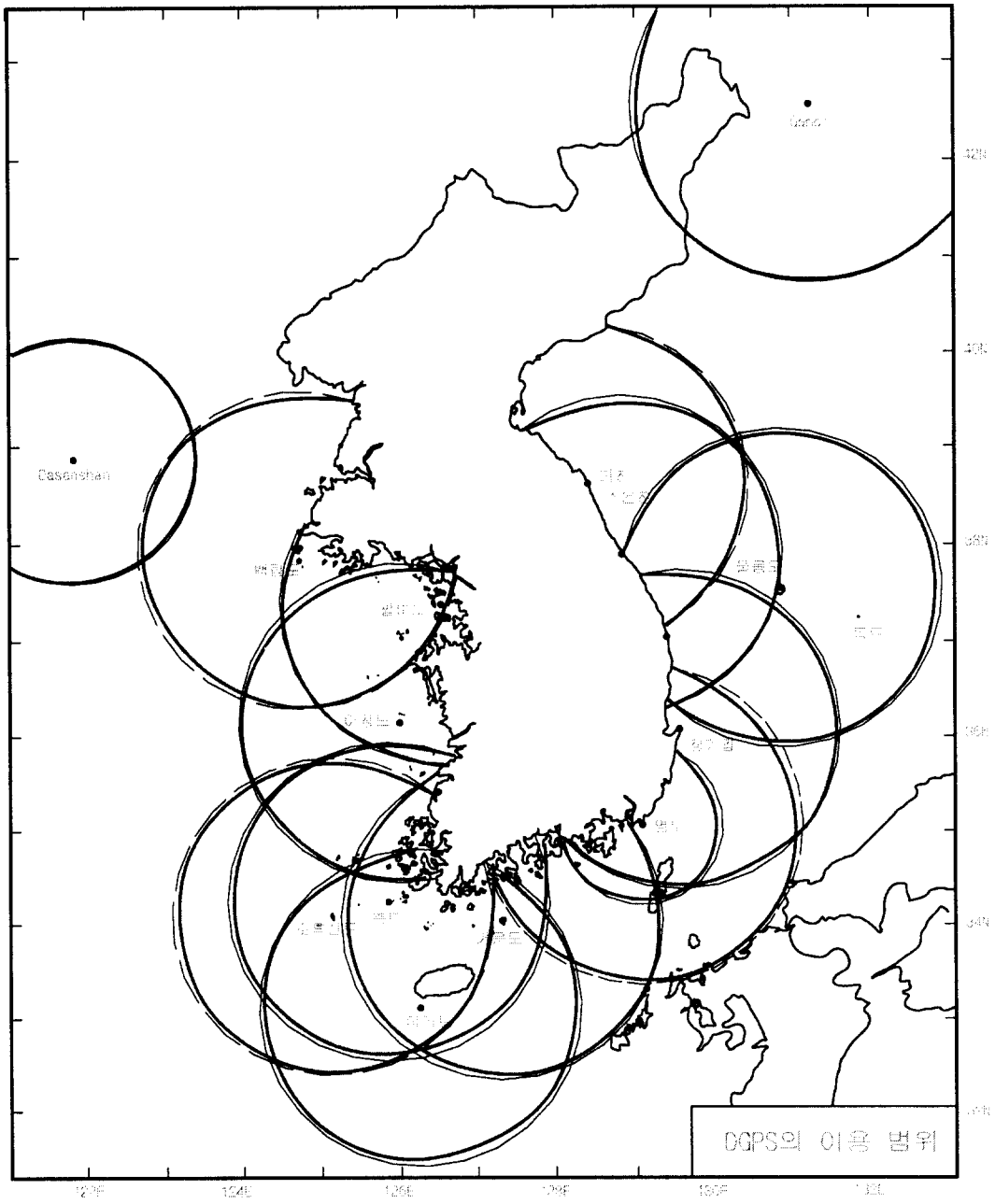


Fig. 3. Existing and Planned Korea DGPS stations and their coverage

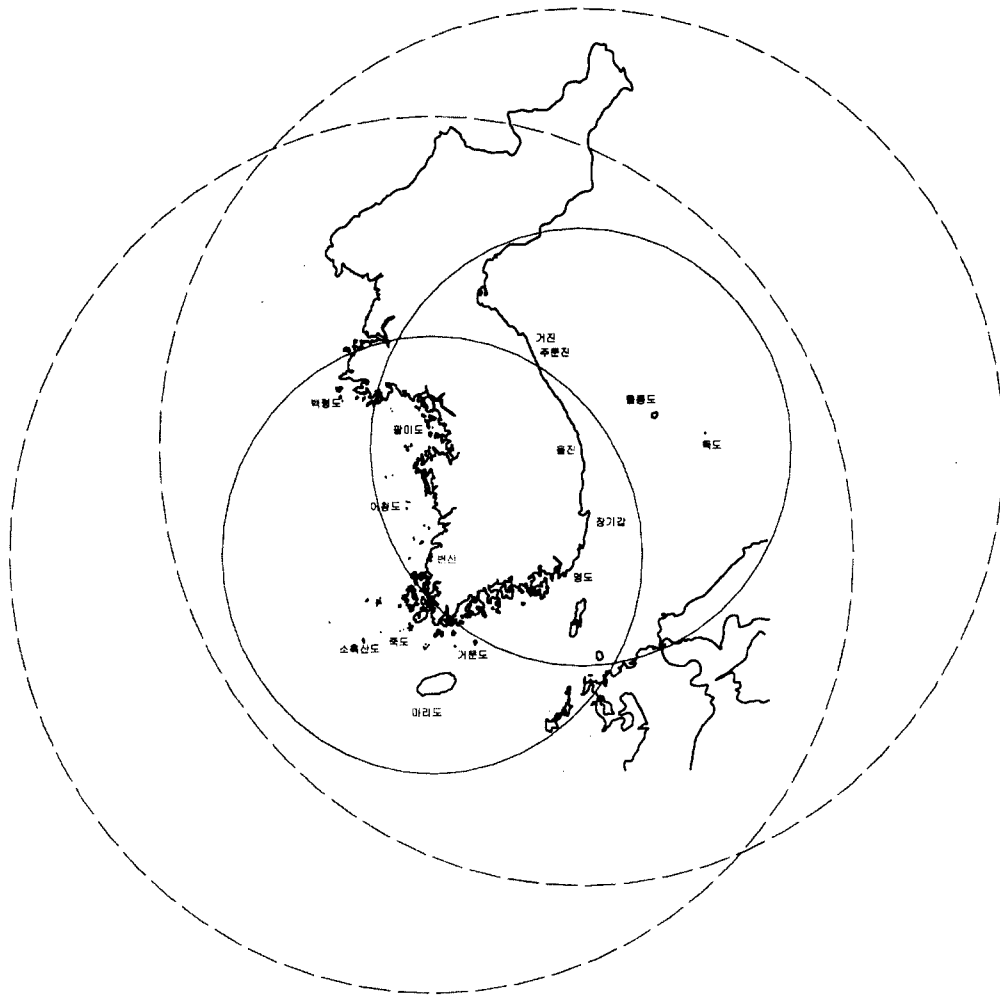


Fig. 4. Coverage of existing Korean NAVTEX stations and expected coverage of them when powers are up-graded.