

Role of Ships and Ports in Disasters

Kazuhiko HASEGAWA

Department of Naval Architecture and Ocean Engineering Osaka University, Japan
hase@naoe.eng.osaka-u.ac.jp

Introduction

When a big disaster happens in a big urban city, the influences of the disaster will not only the direct damage but also by secondary damage, like fires, utilities and transports. In some cases the damages will continue more than 6 months. In this paper the role of ships and ports in case of Great Hanshin-Awaji Earthquake, 1995, will be reported.

Harbor environment during earthquake

Kobe port is one of the major ports and container terminals in Japan extending totally 116km long. Only 9 out of 239 berths escaped damage by seismic shake and liquefaction. The damage was estimated US\$8.3 billion out of US\$83 billion total estimates of direct damage. This is about 10% of it, while 60% of the damage is buildings and houses. Although the damage of highways is 5.5% and that of railroads is 3.4%, the number of the people who were heavily suffered from the damage of railroads. Road transport was almost dead, because of damages of road, concentrating cars and due to the increase of transport such as daily foods and relief materials, disaster debris and restoration materials.

Role of Ships

Under these circumstances, several ships were utilized. Fig. 1 shows how they are used and merits of ships and their expected applications are summarized in Fig. 2. Therefore some rescue ship projects are proposed in several local governments in Japan.

Conclusions

In this paper, the importance and possibility of role of ships and ports in disasters are demonstrated, quoting the case in Great Hanshin-Awaji Earthquake.

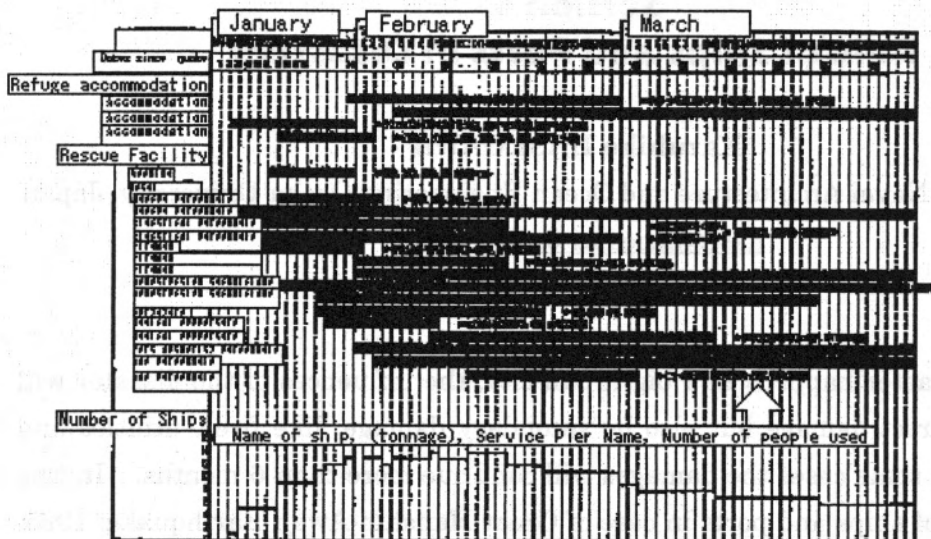


Fig. 1 Usage history of ships at Great Hanshin-Awaji Earthquake

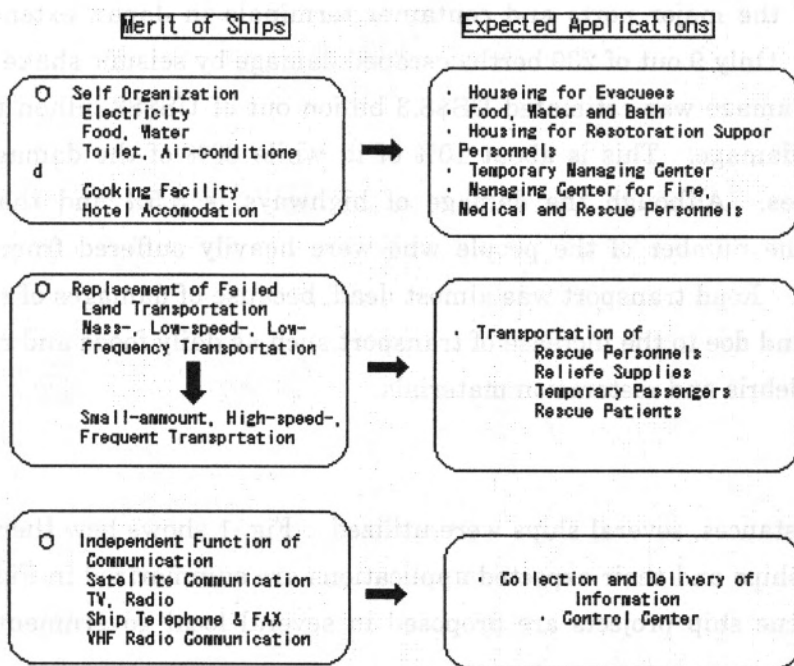


Fig. 2 Merits of ships for usage at disasters

¹ Kansai Soc. of Naval Architects, Investigation Research on Marine Transportation System, Dec. 1995.