HYDRO INTERNATIONAL INTERVIEWS SHOU SHUNBAO, MANAGER, DA HUA HYDROGRAPHIC SURVEYING COMPANY, SHANGHA

â€œDeveloping by Leaps and Boundsâ€

It may look as though Europe, the USA and Canada, followed by Australasia, dominate the hydrographic world scene. But there must also be enormous potential in the area north of the Far East: Vietnam, China, Japan, etc. In particular, the economy in China is growing fast and, with her long coastline and dependence upon shipping, China must see a considerable amount of hydrographic work. Hydro INTERNATIONAL interviewed Mr Shou Shunbao, manager with Da Hua Hydrographic Surveying Company of Shanghai, to obtain more information on hydrographic activities in the area.

Shou Shunbao, born in November 1955, graduated from Nanjing College of Navigation Engineering and is now manager of Shanghai Da Hua Surveying and Mapping Company. He has gained rich theoretical knowledge and practical experience of water transport engineering survey over his 25 years engagement in hydrographic survey for water transport engineering. He is capable of independently developing engineering survey applications.

What is the state of the art in China with regard to hydrographic surveyors? Is there sufficient potential locally in China, or do you have to work with expatriate personnel? What training/education facilities for hydrographic surveyors do you have in China?

With the global progress of technology, especially the rapid development of computer, GPS and communication technology, hydrographic survey technology in China has also developed by leaps and bounds. To summarise the development of hydrographic survey in China in the 20th century, we have attained gratifying achievements in the following fields:

- A leap in the working mode, from manual operation to automation. Echosounders began to be used at the end of 1950s to take the place of sounding lead, but depth data still had to be read manually at the post-processing stage. Since the 1980s automatic sounding systems have been used, marking the automation of bathymetric survey
- A leap in surveying method, from point survey to area survey. The original depth sounding featured sounding point by point. After the application of echosounders we entered into a lineal survey stage. Since the mid-1990s we have realised area survey with the application of multi-beam sounding systems
- A leap in data collection, from analogue to digital. At the end of the 1950s echosounders were all of analogue type. From the beginning of the 1980s, with the introduction of digital echosounders, we realised automatic and real-time digital data collection
- A leap in measuring elements, from single-depth sounding to multiple measurement. For a long time, the measuring element was limited to the depth from sounding datum to natural seabed level. But now it has been widened to include navigable depth (fluid mud layer) sounding, seabed profile survey, dredging and environmental survey, deformation measurement of channel regulation structure, etc
- A leap in positioning means, from land-based system to satellite positioning system. Take the hydrographic survey in the estuarial area of the Changjiang River as an example. In the 1950s, optical instruments such as a sextant were used for positioning on water. From the mid-â€˜60s onwards the Hi-FIX/3 hyperbolic phase positioning system was used. Later, this became the Hi-FIX/6 system. GPS has been used since the mid-â€˜90s
- Rapid development of fundamental theory and applied research. A series of studies and research into hydrographic survey is currently in progress. For example, studies into reference, sound speed correction, correction of water level, mean sea-level and seafloor relief of water-depth sounding; a study and exploration of signal processing and data processing in multi-beam depth sounding systems. There is also study on the development and application of waterway GIS, including the application of DTM and TIN. As a result, a lot of state-of-the-art and practical software systems have been put into use

Is hydrographic survey in China mainly concentrated in estuaries and inland waters or is this work also conducted (far) offshore?

Hydrographic survey work in China falls into the categories of inland waterway survey and coastal waterway survey, being undertaken respectively by corresponding authorities, covering all inland and coastal ports and channels and sea area of China and playing an

important role in shipping and water transport engineering.

Does your Hydrographic Survey Company Da Hua work solely for her parent Company Shanghai Dredging Company or is your company also contracted by third parties? If so, please give some details on the proportion of work for third parties and the type of such survey work.

Shanghai Da Hua Surveying and Mapping Company is an independent water transport engineering survey contractor. It has the qualifications for working on land control survey, engineering survey and marine surveying and charting. Working for our parent company Shanghai Dredging Corporation is part of our companyâ€™s business and our company provides quality service to customers all over the country, without third party support.

By who is the hydrographic survey work for nautical charting performed in China? Is there any participation of private survey companies in such hydrographic work for the Chinese Government?

Chinaâ€™s nautical charts are solely made by specialised marine surveying and charting authorities under the jurisdiction of the Chinese Government, as per the requirements of IMO/IHO, and have a legal binding force. So no participation of private survey companies in such hydrographic work is allowed.

Can you give our readers a brief description of the hydrographic survey market in China in general?

The hydrographic survey market in China is very large. This chiefly finds expression in engineering survey market such as water conservancy projects, civil engineering survey, highway engineering survey, and water transport engineering survey. As far as water transport engineering survey is concerned, besides more than 900 lakes, our country has more than 5,800 rivers totalling 430 thousand km in length, among which more than 80 with a basin area over 10,000km2. The focal points of our nationâ€™s inland waterways lie in the five rivers (Changjiang, Zhujiang, Heilongjiang, Huaihe, respectively, and the Jinghang Canal). The River Changjiang is the third longest river in the world with a navigable length 60 per cent longer than that of the Mississippi. There exist great potentials for resource advantages within these basin areas. These translate into economic advantages that will inevitably demand the development of the shipping industry. This indicates that the inland waterway engineering survey market has been, or demands to be, developed. Similarly, situated as it is on the western edge of the Pacific Ocean, our country has an 18,000km-long coastline, more than 6,000 islands and about 3.50 million km2 sea area. There are many ports and harbours along the coastline. The relationships between channels and ports and vessels are changing and being harmonised continuously. For instance, Shanghai is speeding up the construction of the Changjiang Estuary Deepwater Channel and Yangshan Deepwater Port in an attempt to build an international shipping centre. There will be a big market for survey work here. This is also the case in many other coastal ports. For example, Zhejiang Province has a 6,600km-long coastline, ranking first in China. Coastline with depth greater than 10m amounts to 330km offers very favourable conditions for harbour construction. In particular, the sea area in Ningbo and Zhoushan has 231km deepwater shoreline with depth >10m and 130km deepwater shoreline with depth >20m. Aiming at an international pivotal port, Ningbo and Zhoushan will also be a big market for water transport engineering survey. There are not only the survey research institutes and survey companies under the jurisdiction of National Survey Administration but also survey companies affiliated with the Ministry of Communications and the Ministry of Water Conservancy of China participating in the competition for this market. The competition is rather fierce.

In general, wages in China are lower than in the western world. Is this an advantage for your company or any Chinese survey company in terms of winning contracts for survey work outside of China? Please give some details.

Yes, average wages in China are lower than are those in the western world. But this is not the only advantage for us in winning contracts for survey work outside of China. The prerequisite to being contracted for engineering survey work on Chinaâ€™s survey market is the qualification of a company (certified and issued by National Survey Administration) and its achievements and prestige.

Is there any difference in hydrographic survey practice, methods or equipment between USA/European survey companies and Chinese companies?

Chinese survey companies are largely similar to USA/European survey companies but with minor differences in hydrographic survey practice, methods and equipment. They basically adhere to the same international standard or code such as S-44 IHO Standard for Hydrographic Survey. Many Chinese survey companies have already acquired state-of-the-art equipment, including the corresponding technology and are capable of developing engineering survey applications on their own.

Are there hydrographic survey equipment manufacturers in China and are there research and/or development facilities?

Yes, we do have hydrographic survey equipment manufacturers and research and development facilities in China. For example, Nanfang Survey and Plotting Company, Wuxi Haiying Jiake Electronic Equipment Co, Ltd and the Changzhou Survey Instrument Factory all manufacture GPS receivers. And the Survey College of Wuhan University and Tongji University are developing survey software. In 2003 China was invited to join in the Galileo Global Satellite Positioning and Navigation System Plan and entered into a co-operation agreement with the EU. The two parties will co-operate in such fields as satellite navigation and positioning technology, manufacture, services and marketing, and standardisation of products.

How does the Chinese hydrographic community keep itself informed about developments outside China? Is there a language barrier in this respect or do people regularly consult foreign technical magazines?

The Chinese hydrographic community keeps up with the latest developments in survey technology outside of China by many means; for example, by attending international conferences organised by IHO and WODA and by sending delegations of experts to foreign countries to exchange ideas with technical counterparts. In the meantime, foreign survey experts are invited to China to deliver academic lectures or for academic exchange, or foreign survey equipment manufacturers give lectures here on their products. In such cases, there is no language barrier. Moreover, we can keep up with and track world survey technical developments on the internet or by consulting hydrographic and geomatics journals and other foreign technical magazines in Shanghai Library. Recently, the technical department of our company has been tracking survey systems for detailed relief on the seafloor and the LOG-a DSLP-Echosounder method.

Are there any current or planned hydrographic survey projects in China that you consider of interest for our readers?

In China maintenance survey work is performed every year in inland waterways and coastal ports and channels for the purpose of analysing changes in stream regime and to ensure that these waterways can well serve national economic development.

Is the Chinese hydrographic world interested in contact with the global hydrographic community? Are Chinese hydrographic surveyors visiting foreign international congresses? Is there an association in China similar to the Hydrographic Society?

China has been a member country of IHO since 1970s and Chinese hydrographic surveyors have attended international survey congresses organised by IHO on many occasions. From 14th to 19th April 2002, eight Chinese representatives attended the XVI International Hydrographic Survey Congress held in Monaco. And there is an association in China similar to the Hydrographic Society: for example, the Marine Survey Committee of China Surveying and Plotting Society.