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Canada

Q1

The fundamentals of the science of hydrography (to measure and describe the physical features of those parts of the globe covered by water) and the reasons to do so (for safety of navigation), have remained largely unchanged since the first edition of the IHR, while we have benefitted from significant technological advances to revolutionize how we work. For Canada, with its vast water area, this has meant that technologies such as multibeam echosounders and GPS have facilitated the surveying of great swaths of that area. Further, databases and high-speed data communications has enabled the processing and management of the massive amount of data collected.

Separately, the grounding and oil spill of the Exxon Valdez in 1989 provoked substantial investment in Canada in the infrastructures to prevent similar disasters and accelerated the development of 'smart' electronic charts (e.g., ENC's) and the systems that can use them. For CHS, this meant developing and implementing production environments capable of generating products, and now services, for these systems. By June 1997 Canada released its first official S-57 ENC, and now has an ENC portfolio of 1,269 ENC's.

Q2

While the coverage and quality of data in CA has improved considerably, substantial challenges, particularly in northern waters, remain. Here, we know that developing technologies will play a key role. Uncrewed survey vessels (USVs) can act as force multipliers and operate in areas where the risk to traditional assets, like humans and icebreakers, is very high. USVs can also reduce the carbon footprint and environmental impacts compared to most current hydrographic survey operations. Remote sensing and satellite-derived bathymetry are becoming essential tools in the kits of hydrographers and planners. Underlying all new technologies and capabilities is the technical backbone that enables the secure and rapid transmission of data and information from collection to hydrographic offices then on to end users. Marine spatial data infrastructures will continue to develop as a framework for providing findable, accessible, interoperable, and reusable information. Lastly, the development of applications capable of exploiting S-xxx data will further drive the demand for data from hydrographic offices and other data providers.

Q3

Since its inception, the IHR has documented evolutions, indeed revolutions, in technology and in society which have changed the face of hydrography and how it is used. I have particularly enjoyed the earlier publications which we can now peruse since they have been scanned and digitized.