Offshore Structure Standards

CANADA ADOPTS ISO STANDARDS

By Richard Grant

A significant milestone has been reached in Canada's efforts to harmonize existing Canadian Standards Association (CSA) offshore structures standards with the standards being developed by the International Organization for Standardization (ISO). This milestone was the recent adoption of several new ISO standards as National Standards of Canada. This adoption comes as a result of tremendous effort of many under the umbrellas of the Standards Council of Canada (SCC) and the Canadian Standards Association (CSA), with participation from various stakeholders, including industry, fabricators, consultants, academics and regulators.

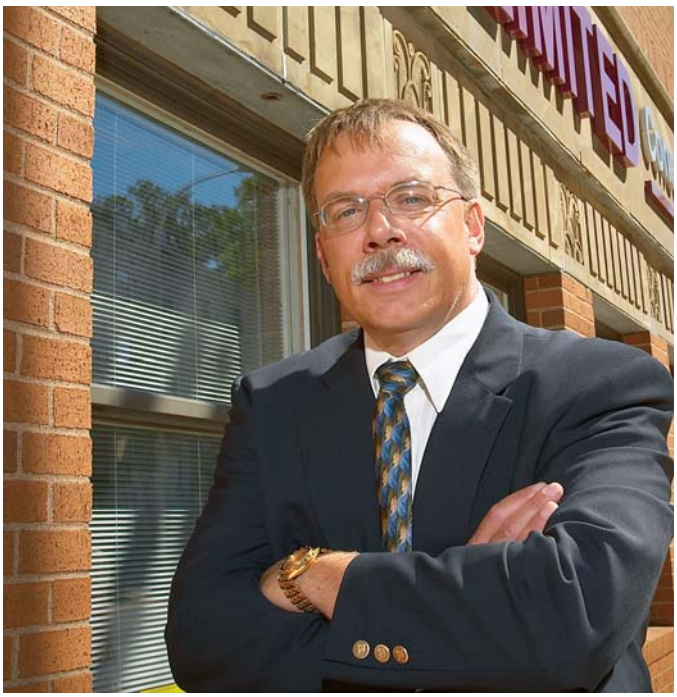
Background

Canada's ISO offshore structures standards initiatives began in 1997 when five Nova Scotia engineers recognized that new offshore structures standards were being developed under ISO and that it would be important for Canada to participate in the development of these standards. Discussions regarding Canada's potential participation in the ISO efforts were held with SCC, and a Canadian Advisory Committee (CAC) was formed with Graham Bagnell of Rowan Companies as Chair. The role of this committee was to monitor and participate in the development of the new standards being developed under ISO.

In 1999, during the development of the Sable natural gas project offshore Nova Scotia and the Terra Nova oil project offshore Newfoundland, it was recognized that Canadian offshore structures standards needed to be addressed as non-Canadian standards were being used for various design aspects of these projects. There were numerous reasons why the CSA standards – namely S471 through S475 – were not being used. For example, they were neither being maintained (updated) nor had they been developed to deal with the design of floating structures such as the *Terra Nova FPSO*. The CSA offshore structures standards were essentially developed for the design of "fixed" offshore structures, those that are typically piled to the ocean floor or are bottom-founded, like the Gravity Base Structure (GBS) used at Hibernia.

As a result of these issues, stakeholders were consulted on the direction Canada should take regarding offshore structures standards. Various views were voiced, from updating the existing CSA standards to focusing directly on participation in the development of the ISO offshore structures standards. This latter position was deemed inappropriate since Canadian regulations referenced the CSA offshore structures standards, and regulators said they needed the CSA standards to evaluate equivalencies through the regulatory exemption process (the Regulatory Query Process). So in order for the CSA standards to be valid, they needed to be re-affirmed through the CSA standards process.

In mid-2000, a Strategic Steering Committee on Offshore Structures (SSCOS) was formed under CSA to address issues regarding the standards. The SSCOS was comprised of senior representatives from stakeholder organizations, with Greg Lever (Petro-Canada, National Energy Board) appointed as Chair. Under the direction of the SSCOS, and through collaboration with members of the CAC, two Technical Committees were formed to assess and update the CSA offshore structures standards with the general direction that once the update was completed, the Canadian Standards would be harmonized with the new ISO standards.



RICK GRANT HAS BEEN INVOLVED IN CANADA'S ISO OFFSHORE STRUCTURES STANDARDS SINCE INITIATIVES BEGAN IN 1997.

Updated CSA Standards

Since the formation of those two Technical Committees in 2000, significant effort was placed on updating the CSA Offshore Structures Standards as a result of changes in knowledge and technology since the CSA standards were first published in the early 1990's. Some of the new provisions in the updated CSA standards included: new requirements in the area of accidental actions fires, explosions, ship collisions, dropped objects, strong vibrations, etc.) with requirements for control and mitigation; new guidance on ice loads and ice accretion; addition of new load combinations; changes to concrete requirements (such as modified resistance factors, increase in crack width limits, inclusion of methodology for calculating creep and shrinkage, etc.); changes to sea operation requirements (to be more responsive to East Coast operations); and the licensing of professionals.[1]

Harmonization of CSA Standards with ISO Standards

Under the umbrella of the SSCOS, the two CSA Technical Committees were merged with the CAC in 2003 to form the new "harmonized" Canadian Advisory Committee. The purpose of this harmonized committee was to broaden Canada's involvement in the development of the new ISO standards and to ensure that requirements appropriate to Canada were reflected within the new standards. These objectives included adding additional experts on the Working Groups and Technical Panels authoring the ISO standards. Canada had various experts engaged directly on the ISO Working Groups and Technical Panels prior to harmonization of the CAC, but with Canada's focus now solely on the ISO standards, the new CAC facilitated adding even more Canadian experts. (Dr. Bob Frederking of the National Research Council is the current CAC Chair).[2]

ISO Standards Published as National Standards of Canada

Considerable work has been performed during Canada's ongoing efforts to harmonize the CSA standards with those being developed by ISO, and Canada is now well meshed in the program. These efforts are now being realized through the publication and adoption of several of the newly published ISO standards as National Standards of Canada. These include:

CAN/CSA-ISO 19900: General Requirements
CAN/CSA-ISO 19901-1: Metocean
CAN/CSA-ISO 19901-2: Seismic
CAN/CSA-ISO 19901-4: Foundations
CAN/CSA-ISO 19901-5: Weight Engineering
CAN/CSA-ISO 19901-7: Stationkeeping

These published standards reflect a portion of the entire suite of ISO standards and by themselves do not reflect a replacement for the CSA Standards. Additional ISO standards such as ISO 19902 for "Fixed Steel Structures" and ISO 19906 for "Arctic Structures" are required before Canada has a suite of ISO standards that can be used collectively for the design of an offshore structure. However, the publishing of standards such as 19902 is just around the corner (later this year as an ISO publication and tentatively next year as a Canadian National Standard).

Those involved in the development of the Canadian offshore regulations will need to revise the regulations to reflect recognition of the new ISO offshore structures standards. Further, those involved in the regulation of the Canadian offshore should also anticipate the potential application of various aspects of the published ISO standards on new offshore projects under development. With ISO standards now published, it is conceivable that an operator could, through the Regulatory Query Process, request that alternate methods reflected in the ISO standards be accepted by the offshore regulators.

Both the updated CSA and the published ISO standards (National Standard of Canada versions) are available for purchase through the CSA (www.csa.ca). It must be noted that the ISO 19901-2 "Seismic" document contains Canadian deviations. These deviations are only available in the National Standard version available from CSA.

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1. Additional information on the CSA update can be found in Ocean Resources 22.3, June 2004, "CSA Publishes Updated Offshore Structures Standards."

2. For more information on the ISO harmonization process, see Ocean Resources, 21.7, October 2003, "Offshore Structures Standards: Canadian Initiatives Accelerate Toward ISO."

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