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Assessing Training Needs of Polar Icebreaker with ADVISOR Enterprise

> "BNH leveraged ADVISOR to provide the Canadian Coast Guard with a digital model that links systems to the crewing of the vessel to quickly assess the impact of future mission changes on crews' competencies."
> Clint Laidlaw
> Senior Manager – Business Development
> SNC-Lavalin

Overview

Canadian Coast Guard's Polar Icebreakers perform multiple functions including the protection of Canadian Arctic sovereignty, maintaining supply routes, ensuring ships safe passage, and assisting in rescue operations. The need for Polar Icebreakers ships is increasingly important as the Arctic ice levels continue to drop, and countries/individuals strive to take advantage of these profitable new routes. To attain these goals, the Canadian Coast Guard is procuring a new Polar Icebreaker. To assess the potential impact of the new ship design on personnel/resource requirements, SNC-Lavalin was tasked by the Canadian Coast Guard to conduct a preliminary Training Needs Analysis (TNA). SNC-Lavalin, in-turn, subcontracted this study to BNH Expert Software. The primary objective of the study is to uncover the time and costs needed to close the knowledge/skill gaps of existing crews. In other words, to develop the expertise needed to operate and maintain the new ship.

Challenge

Since the ship was in the early design stages and a final decision on systems and sub systems onboard the new ship had not been reached, traditional Training Needs Analysis (TNA) that focuses on the Knowledge/ Skills needed by each crew member (Job) to perform their Tasks could not be conducted. Moreover, since the suppliers for multiple systems and sub systems had not yet been selected, assessing the Knowledge/ Skill gaps for Canadian Coast Guard crew was challenging.

Solution

A competency based approach was used to identify the training requirements of existing crew. To facilitate the analysis process, ensure that each requirement has been addressed, assess the multitude of viable options and generate an audit trail to support findings, BNH Training Management System ADVISOR Enterprise was used to collect and analyze the data. The analysis unfolded as follows:

❖ Identify Jobs/Positions (crew and shore) that operate and maintain the various systems and sub systems – 25 in total.

❖ Identify major systems and sub systems that required Training Needs Analysis. The analysis took into account the need to operate in the Arctic for 9 months per year and changing environmental regulations. Out of the 76 systems onboard the new ship, 51 systems did not require any further analysis since training was not needed or the crew had experience with comparable systems.

❖ Identify the technical competencies needed to operate and maintain various systems and sub systems. Each technical competency was further divided into observable/measurable behaviors (indicators of competence). Knowledge/Skills needed to attain each behavior were than identified.

❖ Identify the competencies, as well as level needed, by each crew member by mapping jobs/positions to technical competencies.

❖ Uncover the training requirements for each competency by comparing the required Knowledge/Skills to the Knowledge/Skills that are currently possessed by the crew. This of course was highly dependent on selected supplier, selected equipment as well as Canadian Coast Guard expertise in various domains and regulations. High and a low end estimates were generated to account for these variations.

❖ Prioritize the training requirements for each competency as High (40+ hours of training), Moderate (4 to 40 hours of training) or Minor (1 to 3 hours of training) based on the time needed to attain the desired Knowledge/Skills. Training requirements for each system and sub system were further decomposed to identify required courses/training activities.

❖ Forecast and compare the training costs of systems and sub systems based on course length, number of trainees, availability of training at shipyard or original equipment manufacturer, requirement for trainers/simulators and so forth.

❖ Forecast the training requirements for each job/position based on required competencies and in-turn courses/training activities.

❖ Identify significant training aids/infrastructure investment.

Results

The study was well received by the Canadian Coast Guard. It revealed that 5 systems required significant training time/cost and deserved special attention; 11 systems required moderate training time/cost; 9 systems required minor training time/cost; and 51 systems required minimal or no training. Moreover, courses/activities needed to address all training requirements were identified along with the number of training hours needed by each job/position and Rough Order Magnitude (ROM) costs. In addition to zeroing-in on systems and sub systems that required significant training and estimating the time needed by Canadian Coast Guard to develop the necessary competencies, recommendations for minimizing life cycle costs and infrastructure investments were also proposed.

Final Note

Since equipment was not yet selected on the Polar Icebreaker during the Training Needs Analysis study, Clint Laidlaw, Senior Manager with SNC-Lavalin pointed out that "top-down-system-by-system analysis was used to identify the competency gaps, and training needed to bridge the gaps with the guidance of Subject Matter Experts. This approach provided the Canadian Coast Guard with a digital model that linked systems to the crewing of the vessel to quickly assess the impact of future changes to missions on crews' competency. Maintaining this linkage during In Service Support (ISS) is expected to be important for a vessel with a flexible role and changing missions. Moreover, the digital model can assist in identifying the root cause of deterioration in systems performance – by assessing the adequacy of crews' competency and training provided."

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"Importance of competency management during in-service support is emerging as an area of continuous improvement based on lessons learned from the Deepwater Horizon experience. Competency gap analysis during the ship design phase can provide a structured system-by-system competency management model useful during the ISS phase. If maintained as part of the ISS digital tool suite, ADVISOR can facilitate the analyses of assets' performance, maintenance of design intent, and assessment of crews' competencies as the vessel role evolves."

CONTACT INFORMATION

For more information on this project, or how ADVISOR can assist you in identifying, managing, prioritizing and optimizing training budgets and resources as well as clients' needs and expectations, please contact:

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