

# Assessing Today's Bridge Officers

## NSAP: A powerful tool for dynamic evaluation

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**T**owing companies conduct periodic assessments of their wheelhouse personnel to evaluate the competency of those personnel who perform critical functions in dynamic situations they confront in the maritime environment. Routinely these checks can be accomplished through simulator training, assessments by more experienced company captains, and a host of other means.

In the case of the ferry operation and blue water assessments I audited in regards to this article, I have found that the Navigation Skill Assessment Program (NSAP) provides a similar level of identification of performance gaps as well as strengths in competency for a host of towing vessel navigation operations.

But do these typical evaluations fully identify the competency and skill gaps for each individual officer? Do they speak to their strengths and offer constructive recommendations for training to close these gaps and improve the safety of marine operations?

My answer is yes. The NSAP, a relatively new tool, achieves these greater goals and does so in an objective and repeatable manner, ultimately providing a roadmap for improving mariner skills and reducing maritime risks.

### Realistic Simulations, Comprehensive Feedback

Barry Torrey, Staten Island Ferry's senior port captain, watched one of his vessel captains direct a simulator vessel along a computer-generated waterway. He monitored a collection of displays showing an image of the simulator vessel's bridge along with displays repeating the simulator's radars, controls, and the electronic chart display showing the vessel's position on a complex waterway.

At that moment, only the NSAP assessment team and the port captain in the simulator control room knew that a planned assessment "event" was about to take place. The simulator

vessel approached a color-coded line on the control room chart display visible only to the simulator operators. The assessment team called out the trigger event on a VHF radio and triggered the movement of a vessel stored in the simulator computer program, creating an event.

Triggered events come in many forms—a vessel emergency, a change in the weather, another vessel meeting or approaching the assessed vessel, a significant change in visibility, or similar commonplace events. Each event is carefully tailored to provide a realistic and believable challenge for the deck officer being assessed.

As the simulated voyage continued, the assessment team and port captain worked together to measure how close to accepted standards the deck officer performed the duties of officer in charge of the navigation watch. They did this by observing how the assessed officer directed the vessel in relation to the simulated events and comparing those actions to various standards of performance. In the assessment I observed, a senior port captain and an additional port captain were in attendance to provide



The NSAP assessment team, comprised of experienced master mariners, monitor the progress of an assessment scenario via closed-circuit TV and the simulator's computer monitor system. Other NSAP facilitators are on the simulator's bridge along with the bridge officer being assessed. Photo courtesy of author



Facilitators and the mariners being assessed meet at the NSAP at the Pacific Maritime Institute in Seattle to review the outcomes of the assessment process. NSAP photo

a predetermined time before approaching the landing dock, as the company's operating procedures require.

By allowing the inclusion of these unique procedures—but enforcing a broader portfolio of accepted performance standards for all required skills—the assessment of deck officers, captains, and mates becomes a true reflection of their overall competency as an organization. It is also an indicator of both the strengths and potential weaknesses of their mariners.

### **NSAP to Test Risk Mitigation**

Staten Island Ferry, owned and operated by the New York City Department of Transportation, is the busiest ferry route in the United States, transporting 23.9 million passengers in fiscal year 2017. It is also the world's busiest passenger-only ferry. These facts make clear

comprehensive feedback, each offering comments and observations about each event on the assessment sheet as the simulation unfolded.

The Staten Island Ferry port captain, a regular participant in the assessment process, explained at critical points how the specific operating procedures required for his company would apply to a specific event. This allowed for some of their specific protocols to be measured during the course of the assessment. In this case, the deck officer operating the simulated vessel directed a member of the bridge team to make a public address announcement at

the benefits of using such a program for risk mitigation.

Meanwhile, back in the bridge simulator, the deck officer is confronted with another occurrence in a series of planned events. The NSAP assessor noted the specifics of how the deck officer handles each one. At the end of the assessment, a computer printer produced a detailed chartlet showing how the participant managed this event—a critical turn in the waterway. Showing colored segments indicating the acceptable maneuvering area layered over the navigational chart, the color chartlet indicated how effectively the deck officer maneuvered the vessel through the turn, allowing the assessor a means of communicating how well the vessel was handled during a post-assessment debrief.

The assessment voyage continued. The bridge officer continued to confront highly realistic events throughout the remainder of the passage. To facilitate the realism of a vessel voyage, the bridge is manned with a helmsman and a mate to assist the officer directing the operation of the vessel and aid the officer in the use of otherwise unfamiliar equipment.

For deep draft ocean assessments, there are management level assessments designed to challenge captains and chief mates, while other versions of the assessment are targeted at junior officers, third mates, and second

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**1,600 assessments on merchant marine professionals using the NSAP model ... noted a number of characteristics of poor seamanship and navigation skills in the merchant marine community.**

—U.S. Navy Comprehensive Review of Recent Surface Force Incidents, October 26, 2017, p. 49

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The bridge officer is assessed in a realistic maritime environment. To facilitate the realism of a vessel voyage, the bridge is manned with both a helmsman and a mate to 1) assist the officer directing the operation of the vessel, and 2) aid the officer in the use of otherwise unfamiliar equipment. NSAP photo

mates—operations level. Regardless of which version is being conducted, each assessment voyage lasts less than an hour and is designed to have an equivalence between all versions of the assessments.

### Team Evaluation

At the conclusion of a run, a computer-generated voice says, “Your exercise has been suspended.” However, even though the simulation exercise may be complete, the real work of the assessment is just about to begin. In the simulator control room, the NSAP assessment team and the port captain met to compare notes and arrive at a combined appraisal for the bridge officer being assessed. The port captains shared their unique perspectives on their respective vessel operations to ensure the assessment met the needs of each operation.

Once the discussions and observations are assembled, the assessment team met with the deck officer. Armed with the report, assessment worksheets, and notes, the team began constructively walking the officer through the entire voyage. They pointed out the individual events to illustrate how the bridge officer handled them in comparison to the desired standards of performance with

respect to the areas of communications, bridge resource management, ship handling, navigation regulations, and the use of bridge navigation equipment.

The experience is designed to be positive, constructive, and supportive of the training needs of the bridge officer, aiming to close any applicable performance gaps. In most cases, the bridge officer being evaluated has already self-assessed his or her performance, so the discussion centers around the desire and means to improve performance in these critical vessel operating areas.

### Procedures and Protocols

To ensure these complex assessment exercises are manageable and effective for the bridge officers, the program follows a comprehensive set of procedures and protocols. For example, each person attending the assessment program signs a non-disclosure agreement to protect the integrity of the assessment program.

On arriving at the Maritime Institute of Training and Graduate Studies (MITAGS) in Linthicum Heights, Maryland,<sup>1</sup> the Staten Island Ferry’s bridge officer group gathered with the Staten Island Ferry port captain and met the assessment team—generally master mariners and

Several repeat clients of the program use the NSAP as part of their interview and hiring process, as it has become the most efficient means to determine mariner competency. It is obviously more cost effective than learning that the mariner lacks the critical competencies required in the challenging and unforgiving maritime environment after hiring. An opportunity to close performance gaps and reduce the risks before a catastrophic marine casualty is an opportunity well spent.

adjunct simulator team experts. The group learned about the NSAP concept through a video presentation and was then familiarized with the bridge navigation simulation system and the team members supporting the system.

The bridge simulator is state-of-the-art, complete with external visual displays that are hyper-realistic, displaying the dynamic image of the waterway as well as shore features, other vessels, and the ever-changing weather conditions the bridge officer will encounter during the assessment scenario. The participants' vessel models the precise handling characteristics of a vessel similar to that used by the specific industry's sector. The computer program driving the simulation takes into effect the forces imparted by the marine environment in terms of current or wind, allowing for the presentation of a variety of believable weather conditions.

After the initial briefing and familiarization is complete, each bridge officer is given time to complete their

## NSAP: A Program of Critical Importance

Recent Navy accidents occurring in the Far East, along with a host of other historical accidents, indicate a need to continually assess the competency of bridge officers in light of their great safety responsibilities. The Navy has released its *Comprehensive Review of Recent Surface Force Incidents*,<sup>1</sup> which represents a summary of significant actions needed to fix the larger problems and their causes leading up to these incidents. In this report's section on individual training, the authors made this recommendation:

*Create an objective, standardized assessment program to periodically assess individual seamanship and navigation skills over the course of a Surface Warfare Officer's career. This process should be informed by the MITAGS Navigation Skills Assessment Program (NSAP) principles to assess Surface Warfare Officer seamanship and navigation skills at every career milestone, including an objective assessment by SWOS prior to initial qualification as Officer of the Deck. [NETC, 31Mar2018]*

The report explains the significance and value of the NSAP as follows:

*One example of this training can be found at the MITAGS, which developed a program to objectively assess civilian seamanship and navigation skills and provide recommendations for focused training and improvement. This program, the Navigation Skills Assessment Program (NSAP), assesses the performance of individuals in a one- or two-day scenario to measure performance in five areas:*

- *ship handling*
- *communications*
- *bridge equipment use*
- *Bridge Resource Management (BRM)*
- *application of the Nautical Rules*

*BRM is the process by which bridge watch officers make use of all available human, equipment, and information resources to safely and effectively navigate a ship ...*

*The failure of qualified, trained, and certified personnel and watch teams to execute their duties safely and professionally, while unacceptable, is not uncommon.*

*For example, the review team observed instruction at MITAGS, which has performed over 1,600 merchant mariner assessments using the NSAP model described above, and noted a number of characteristics of poor seamanship and navigation skills in the merchant marine community. For example, 36 percent of individuals turned to port in extremis; 35 percent were unable to properly tune their navigation radar; 30 percent did not make proper use of electronic chart system safety features; and there was an overall overreliance on electronic chart systems as a single source of navigation information, as well as a broader neglect of visual and radar equipment.*

### Endnote:

<sup>1</sup> [http://s3.amazonaws.com/CHINFO/Comprehensive+Review\\_Final.pdf](http://s3.amazonaws.com/CHINFO/Comprehensive+Review_Final.pdf), October 26, 2017

independent voyage plans. To ensure assessment objectivity and eliminate any unfair advantages, the bridge officers navigate a fictional but fully realistic waterway on a vessel similar to one of their own vessels. Because of this, the assessment is also designed to account for any lack of familiarity with equipment. The goal is to analyze the operation and navigation skills of each of the bridge officers, allowing the company to make an informed decision about any potential training and further skill improvements needed for their mariners.

At the conclusion of the assessment voyage, each bridge officer is individually debriefed in a private setting and given an opportunity to reflect on his or her own professional performance—a rare occasion for any professional mariner. During the debrief, a senior member of the company—like the Staten Island Ferry senior port captain—will normally be present, which is extraordinarily valuable to both the mariner and the company. These senior personnel ensure the assessment and debriefing incorporate specific company culture or priorities and give the company direct feedback about the character

and nature of their deck officers in a safe and unbiased manner.

One of the unique benefits of the program is the opportunity to capitalize on additional training offered to maximize the attendees' time. During the Staten Island Ferry assessment program, for example, the company elected to provide its attendees with additional training in fatigue reduction, the role and responsibilities of a vessel master, and reporting procedures for marine casualties, among other subject areas.

This particular group of deck officers was the sixth group to be assessed by the Navigation Skills Assessment Program. As an early adopter of NSAP, Staten Island Ferry

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To date, the NSAP program has assessment scenarios developed for:

- NSAP Oceans—Management Level (masters and chief mates, deep draft vessels on oceans routes)
- NSAP Oceans—Operations Level (junior officers, deep draft vessels on oceans routes)
- NSAP Workboat—deck officers operating vessels of a tonnage less than 3,000 International Tonnage Convention (ITC)
- NSAP Ferry—bridge officers operating ferry vessels
- NSAP River—deck officers operating vessels less than 3,000 ITC on routes generally not subject to the Standards of Training, Certification, and Watchkeeping for Seafarers (STCW)
- NSAP New Hire—primarily used to assist companies in the hiring process
- NSAP new pilot assessment programs



NSAP facilitator Captain Olav Nysetter explains the unique control functions of the starboard bridge radar unit to a Staten Island Ferry captain prior to the captain's individual familiarization exercise. Photo courtesy of the author



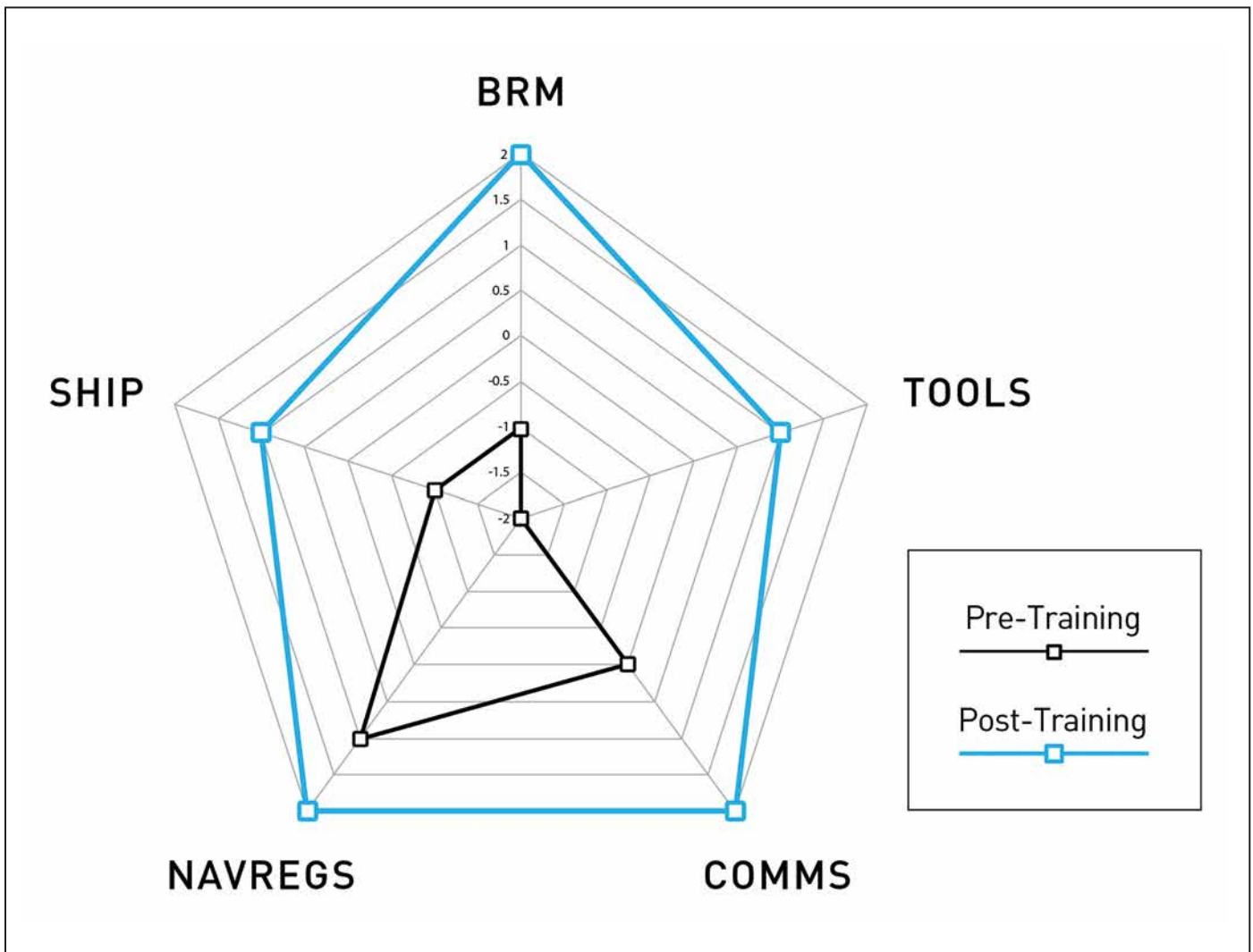


Diagram indicating areas of examination in the NSAP assessment. A detailed report identifies performance gaps so marine companies can create an appropriate training plan to close those gaps and improve the safety of marine operations. Figure courtesy of NSAP

also participated in three beta testing sessions of the program for their ferry operation before shifting into the live production version of the assessment program.

### Focused Training and Improvement

At the conclusion of each specific company's assessment program, the NSAP offers comprehensive data on individual performance and, more importantly, a composite picture of company-specific trends and risks associated with the operation of that company's fleet. As noted in the NSAP brochure, "The vision of the NSAP is to reduce catastrophic maritime incidents by addressing mariner competency and knowledge and use of technology."

The NSAP assessment criteria used to evaluate the competence and skill of these officers was developed to the highest standards using the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 standards as a minimum measure of

performance. Working with experts from diverse segments of the maritime industry, as well as experts in the field of the objective measurement of human performance, the program provides a challenging experience and a useful measurement tool for maritime companies. //

### About the author

Keith Fawcett is a licensed merchant mariner and a staff member at the Coast Guard Investigations National Center of Expertise. He worked in the marine industry for more than 20 years, generally in Gulf of Mexico operations. As a Coast Guard marine casualty investigator, he has conducted high-profile marine casualty investigations for the Coast Guard, including that of the sinking of the SS El Faro, which was lost in October 2015. He also received the Coast Guard's 2015 Sener Award for excellence in marine casualty investigations.

### Endnote:

<sup>1</sup>The training is also offered at the Pacific Maritime Institute in Seattle, Washington, as well as at five other global locations.