

A New Assessment System for Applicants to the Swedish Maritime Academy.

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In the beginning of 1992 there was a discussion in Sweden concerning ways to improve the admission system of the Maritime Academy. The prevailing system failed to take into account that working as a maritime officer, and maybe later as a master, has special demands and hazards and often requires more from a person than ordinary jobs ashore. The prevailing system assumed that anyone with the appropriate educational back-ground could enter the academy. There was no consideration of the candidate's personal suitability for this type of profession.

The Importance of Personal Suitability.

In the future it will be equally important to assess a candidate's personal suitability, considering the great responsibility for human lives, the environment and economic value that is placed in the hands of the person who is in charge on the bridge. For admission to other professions with similar responsibilities and hazards, personal suitability has since long been assessed together with the formal schooling. As examples we might mention airline and airforce pilots, as well as people with certain jobs at nuclear power plants, special forces in the police and bodyguards.

Life at sea is demanding and there is no reason whatsoever why nervous, stress-prone, easily-exhausted, unbalanced, disorganized or anxious people should receive training for the responsible work on a ship's bridge. There are plenty of other jobs in society, qualified jobs, where personal traits like these are quite acceptable and where limits and tolerances are broader than at sea. There are plenty of other interesting and important jobs to choose where misjudgments and mistakes mostly are without serious consequences.

A proper assessment system may have the advantage of serving as guidelines not only for the academy, but also for the applicants, and it is important not to encourage young people to invest hard work and energy in pursuing a profession that is not suitable for them. It is especially important nowadays in Sweden when many applicants lack experience from life at sea and in consequence are unable to know whether they fit or are making the right choice.

The importance of personal suitability is widely accepted in some countries nowadays in other fields. For example, in Sweden there are continuous assessments of medical students during their training. Professors in Sweden today even have the responsibility to suspend students who are regarded as unsuitable, either because of their personality or their lack of achievement. Another example is that managers and executives in business are often employed after careful assessment of their personal suitability.

In the discussions among active officers, representatives for The National Swedish Administration of Shipping and Navigation, The Swedish Shipowners' Association, The Maritime Academy at Gothenburg and the unions directly involved, the parties agreed to develop a new system which, in addition to the formal schooling, would also take into account the applicant's personal suitability. The new system should go into effect in late 1993. The assignment to design such a system, in collaboration with The Maritime Academy at Gothenburg, went to me.

The project, which began in June 1992, is now nearly finished and a new assessment method is expected to be completed during March this year. I am glad to have this opportunity to relate to those interested how the assessment is designed and how the work with the project has been progressing. In doing so, I hope to share some knowledge of the system as well as the thoughts behind its design.

Changing Professional Roles.

In the near future, as far as we now can see, the role of a maritime officer and especially that of a master is going to change in important respects. Besides being a skillful, judicious and experienced seafarer, the master's other duties are more and more resembling those of an executive. This development is quite natural because a master, however you look at him, has many people as subordinates and is responsible for and in charge of a substantial enterprise with a great turnover. This role will probably be more influenced by financial considerations, with more emphasis on leadership and business. Like an executive ashore, the master may have to work with an executive group consisting of his closest subordinates. If so, the demands on tomorrow's officers at sea – at all levels – may be far different from those that exists today.

The reasons why admission to the Maritime Academy should include assessment of personal suitability can be summarized as follows:

Security aspects – the risks and the responsibilities involved.

Concern for quality of training.

Raising of the status of the Academy and the training.

A better international position for Swedish officers.

Adapting to future changes in the work.

If it is agreed that not everyone is suited to become a maritime officer and that a suitable personality is required to become a *good* maritime officer, the next step is to determine what the important personal traits are. Because students normally develop and mature during the training period, we have chosen to assess more basic personal traits. Below is a list of the more essential ones, followed by brief comments.

The list is not in order of importance.

Technological comprehension

This trait is based upon the fact that shipping is technical in nature and is rapidly being even more so. A proper understanding of technology is a prerequisite for handling the technical devices aboard, as well as the ship as a whole. Some people have a natural aptitude or “feeling“ for technical things. Others, with a lesser degree of inherited technological comprehension, are able to handle technical devices, but often in a quite mechanical fashion.

It is difficult to develop technological comprehension for persons who lack the “feeling“ for and interest in technology, while others seem to have this capacity from the start.

Intellectual capacity

The Maritime Academy provides an education which, in contrast to most other university level education, is directly focused on employment at a supervising or managerial level. The career almost certainly leads towards promotion. With this in mind, and due to the demands of the work, it is a reasonable requirement for candidates to possess good intellectual capacity. They should have a well-developed ability for reasoning and logic, together with a firm comprehension of complex situations. They should be able to think and react rationally and have the capacity to understand and utilize complex knowledge. Furthermore, they should have a natural aptitude for analytical thinking.

Intellectual capacity may indeed be developed in people who value such development but considering the age of the students the foundation is probably already laid. There is reason to assume that the student’s capacity on entering the academy almost will remain stable during training and in his or her professional life.

Perceptiveness

Students should possess a capacity for rapid, reliable and adequate perception. This means the ability to accurately understand surrounding factors without extensive subjective interference. The capability of accurate perception is especially important because the successful utilization of other capacities, e. g. experience, knowledge and intellectual capacity, depends on the quality of perception. Adequate perception is accompanied by adequacy and rapidity in action, an objective approach to one's surroundings, reasonable judgment and similar traits.

Perceptiveness varies among people and over time but is developed relatively early in life and may be permanent. Barriers to perceptiveness are developed relatively early in life and should not be found in officer candidates.

Sociability

Life at sea is extremely social and seafarers live and work in groups and are together with different sorts of people all their time. To be able to work harmoniously in such a special environment, it is important to be extroverted, sociable, communicative, tolerant and not to have tendencies towards extreme attitudes or ways of living. The basic disposition should include sensitivity to and interest in other people, as well as an inclination to strive for understanding rather than confrontation. There should also be a certain firmness in the personality.

Sociability, interest in and openness to others are personality traits which start to develop relatively early in life and should be found in officer candidates.

Self-control

A reasonable degree of self-control is linked with the person's self-perception and has an impact on both the security aspects and the social life onboard. Self-control means a continuity and evenness in the personality. This capacity is evidenced by emotional stability, good judgment, responsibility, a capacity for concentration and maturity.

Most capacities related to self-control, e. g. maturity, develop gradually during the life span of a person. We cannot compare an 18-year old candidate with an adult in this respect, but we should assess the applicants according to their age, i. e. they should have a level of maturity related to their actual age and the demands of the training they apply for.

Stress tolerance

The work as an officer requires a person to have the ability for simultaneous operations and accurate performance. The nature of the work includes now and then being exposed to situations which are potentially hazardous. Being able to perform adequately and not

develop psychosomatic disorders requires an aptitude for acting capably even under stressful conditions. Stress affects each of us differently and we have different thresholds where we begin to be affected by it. Generally speaking it is favorable to have a high threshold for stress. Once stress reactions appear, it is also favorable if they have as little adverse effect on personal behavior as possible.

The capacity to endure stress is positively influenced by knowledge, experience and responsibility. The candidate must, however, have a certain basic level of stress tolerance and this is probably already well established in the personality at an earlier age.

No Supermen.

After presenting the above list of important traits for maritime officers, I should make it quite clear that we are by no means looking for any supermen or elite group. The candidates we would like to see as students in the Maritime Academy should be people of good quality whom we can expect to become skillful in their tasks and who have the personal qualifications characteristic of people in responsible professions. Our aim must be to ensure that shipping in its entirety, with the help of technology, will be adapted to people and that ships can be maneuvered and operated safely by specially trained, but ordinary, balanced and sensible persons.

After having determined the criteria for personal suitability, the next step in the project has been to select and evaluate various psychological methods that can help us make the assessments.

The Selection of Psychological Tests.

At the outset, we must realize that admission tests include several hundred applicants within a relatively short period of time. This means that we are forced to refrain from methods designed for individual use. We have to choose methods suitable for group testing and capable of guiding us in our assessments without necessarily having to interview every single candidate.

Group testing carries with it the necessity of using “paper and pen“ methods, which the candidate can complete (after instructions) at his or her own speed. Because of the necessity on relying solely on test information, we have limited ourselves to tests with which we have substantial experience.

The methods we have selected enable us to test 30 - 50 people at a time. We have, however, limited the number of tests in order to be able to use the set of tests within a time span of 2 - 2 1/2 hours, including a break. The reason for this limitation is that methods of this type require concentration and are somewhat fatiguing for the applicants. At the same time, the reliability of the tests depends on the applicants' ability to maintain a high level of concentration.

The psychological testing should also be inexpensive and relatively easy to evaluate. The testing of pilot candidates for the Swedish Flight Academy costs about five or six thousand Swedish crowns (US\$ 800-900) a person and is individually done. The candidate have to pay for these tests themselves. When testing hundreds of applicants for the Maritime Academy, it is necessary to keep the costs to a minimum, and our methods have been selected so that the tests can be administered by the ordinary staff at the academy. We have also taken into account that the evaluation of the test results, which must be done by a trained psychologist, should not be time-consuming. This is because the testing takes place only a short time before the training starts, and the applicants must be informed in due time whether they have been accepted or not.

These limitations mean that we cannot use the special methods that would otherwise be preferred. Instead I have striven to select, within the given limitations, the best possible set of tests and to adjust the methods to fit our purpose. In the set of tests we have selected there is a certain flexibility and a potential for further improvement as we gain knowledge and experience from assessing applicants. Gradually we hope to develop a model which will be reliable for the use world-wide.

Testing the Tests.

In order to find the best solution, I first made a preliminary study of a rather large number of tests. Some the ones I have found to be among the best were evaluated with the help of my associates at Marine Profile. A limited number of tests were subsequently selected for further evaluation.

We had recently tested the methods which reached the "final" with the help of the students who were admitted to the Academy last autumn. The students participated voluntarily and had nothing to gain or lose from the assessment, as they had already been accepted. The objective was instead to test the tests. This trial testing gave me the opportunity to further limit the set of tests and select only those which are best able to shed light on what we are interested in. Similar tests can, for example, be tested in competition with each other in order to find the ones which best serve our purpose.

The tests that have been tested shed light on the following capacities:

The capacity for logical thinking

We obtain information concerning the applicant's capacity to reason, perceive relationships and use logic as a tool in solving problems. The capacity for logical thinking is measured in several different ways in different contexts and combinations.

Stress-tolerance

The test gives us an understanding of the degree the person's performance is influenced by stress. We are interested in qualitative as well as quantitative influences on performance.

Perceptiveness

Here we test rapidity and accuracy in perception and the ability to discriminate between similar impressions. We also obtain information concerning the applicant's capacity to remember visual details.

Technological comprehension

We look at the capacity for using logical reasoning in working with technical problems. The feeling for and understanding of technical problems and the capacity for spatial perception. In order to be able to solve these types of tasks, the applicant is forced to adopt a methodical way of thinking.

The capacity for simultaneous performance

This test measures the ability to continue the performance of one task while solving various other tasks simultaneously.

Understanding of instructions

Here we obtain information about the student's capacity to understand written instructions and to put them into practice.

Self-assertiveness

This concerns information about the applicant's need to behave assertively, receive attention, to be self-sufficient, to remain aloof, and whether the applicant tends to be a conformist or feels at ease in a group.

Responsibility

This concerns reliability, persistence and endurance with regards to tasks.

Emotional stability / self-control

Here we obtain information about how emotionally stable or unstable a person is. We can find out whether the applicant easily becomes anxious and worried, or remains calm and sensible, as well as whether the applicant seeks excitement and is prone to take risks, or more prone to be careful and avoid risks.

Vigilance

Here we measure the capacity for being observant of changes or signals from the surroundings.

Accuracy

This concerns the applicant's ability to perform with care and accuracy, both under normal and stressful conditions.

Sociability

Here we get an understanding of the applicant's strategy towards other people, whether the applicant feels at ease with and seeks the company of others or is withdrawn, and in what manner the applicant is able to feel confidence in others and trust those around him.

Tempo

This concerns the applicant's natural tempo, whether he or she needs variation and excitement or is able to stick to tasks not characterized by enjoyment or gratification.

Opportunities for Holistic Evaluation.

With a set of test like this we are able to obtain information on several of the most important capacities for prospective maritime officers. We can also obtain information about how pronounced a certain capacity is and in most cases even the character of the capacity. Furthermore, the test results are presented in such a way that makes it easy to compare the applicants.

In order to systemize all this information, it is necessary to computerize the test results and present them individually in a way that facilitates the psychologist's assessments of the different applicants.

We must keep in mind that we are handling a huge amount of information, obtained from approximately seven different tests which together measure twelve variables for about two or three hundred applicants.

From the analysis of the results we are able to get an holistic view of each and every applicant and also to rank them with each other. This ranking will later complement the formal applications and broaden the base for admission.