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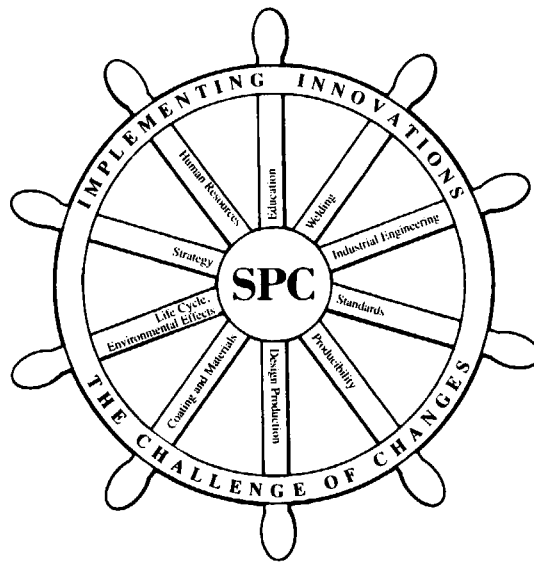
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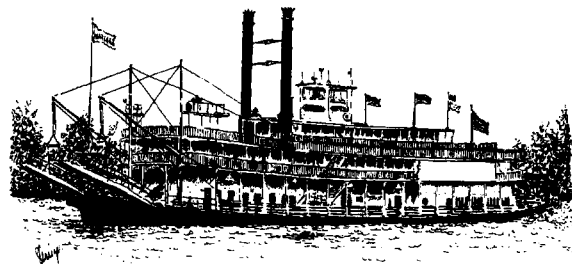
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Training Initiatives for Classifications Society Personnel

No. 9A-2

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ABSTRACT

The Ship Classification Society is an institution unique to the commercial maritime industry. For a single vessel the classification society may act on behalf of a number of client organizations: owner, shipyard, underwriters, furnishers of capital, flag state, port state, etc.

The interests of these various groups require a professional staff totally familiar with the uses and practices of the industry, codes and laws of vessels trading nationally and internationally, flag and port state regulations and, of course, the engineering disciplines and practical skills associated with the design, construction, maintenance and operation of vessels.

In the not too distant past it was possible to acquire experienced professional staff requiring little additional training. With the shrinking U.S. flag fleet, this pool of professionals has largely disappeared in this country. Today's professional staff of engineers and field surveyors is drawn largely from recent graduates of the maritime academics and colleges of engineering.

Although well prepared these personnel do require extensive on the job and classroom training to meet the objectives of the American Bureau of Shipping. In addition to our internal objectives, the quality assurance constraints of the European Community and others place a special emphasis on documented training.

This paper will discuss some of the problems encountered in delivering training for a multinational, multi-cultural and multi-lingual organization, and the initiatives being undertaken by the to provide the necessary skills and to ensure reasonable and consistent interpretation and application of codes and Standards and professional execution of assigned tasks.

In order to realize these objectives, a training program must be aggressive and pro-active and look into the future to anticipate the requirements of developing technologies and it must do this within severely defined budgetary and manpower constraints.

INTRODUCTION

The scope of the activities of the company and other ship class societies has expanded dramatically the past 40 years. From a relatively narrow concern with the hull structure and machinery plant of the ship it has grown significantly to include many other aspects of the maritime enterprise. In addition to being almost totally free from constraints, the maritime enterprise itself has become subject to extensive international and port and flag state regulation. At the same time, driven by technology, the size, character, types of ships and arrangements have changed. Mobile and fixed offshore rigs have come on the scene in large numbers in the search for petroleum beneath the seas.

QUALITY OF SERVICE

Within the members of IACS (International Association of Classification Societies) there is a concern for the quality of service and for surveyors to have the skills and training to deliver that quality. In the past the concept of quality was largely intuitive and subjective; what has changed is that quality has become formalized with standards providing for an objective measure. With the development of ISO 9000 by the International Organization for Standardization, certainly the most well known of quality standards, there are now specific requirements by which to judge a quality system. Two of these requirements are of interest here, namely, training and documentation. One of the things, however, which ISO 9000 does not provide is a definition of quality; in this respect all are left to fend for themselves. A reasonable statement might be that when clients receive what they bargained for and expected they have received a quality service. This presupposes, of course, that the clients' expectations were reasonable and were understood by the provider of the service. In many cases the services involve transactions with multiple clients. In the process of classing a vessel and related statutory work, for instance, although normally retained by the shipyard, the classification society has direct or indirect

responsibilities to the owner, to the port and flag states, to the vessel's multiple underwriters, to the financial institutions providing the capital, to the vessel's future crews, to the future cargo interests, to the environment and many others. The task of attaining a consonance of expectations with each of these many parties is considerable. A provider of services must be concerned with the quality of the services provided: whether the company prospers or fails depends largely if not entirely upon the quality of the work done. At the end of a contract regardless of whatever disputes may arise between the other parties, they should all be satisfied that services have been provided in a professional manner and as advertised. Of course this may be easier to say than to achieve, but for now this is what is proposed as a quality service. In other words in the case of a contract for classification for new construction direct and indirect clients are offered an oversight service which is consistent and professional in applying rules for classification, statutory instruments, regulations and standards as required and in carrying out other oversight obligations with skill and diligence.

This is the goal, but how to get there from here? Compliance with ISO 41000, and to the standards of quality set by IACS is a first step. An important element of each of these standards, and truly important in its contribution to quality is **training**. The IACS document is based on ISO 9000 and is customized for the particular aspects of classification work; since, there are no serious discrepancies between the two, ISO 9000 is used as a model. Figure 1 below identifies the ISO training requirements.

- * Identify the need for personnel training
- Identify necessary skills
- * Establish training methods
- * Qualifying basis:
 - Appropriate education
 - Training and/or experience
- Maintain training records and
- * establish Procedure for:
 - identification
 - collection
 - indexing
 - filing
 - storage
 - maintenance
 - disposition

FIGURE 1
ISO TRAINING REQUIREMENTS

THE NEED FOR PERSONNEL TRAINING

Traditionally most professional training has been "on the job" (OJT); in general the required skills can be learned faster and more efficiently on the job than in a classroom environment provided that the candidates possess the prerequisite schooling and sea going or shipyard or related experience. A licensed chief engineer, for instance, can be expected to have a substantial grounding in the engineering systems of a vessel and has probably dealt with classification society personnel in the course of previous employment. Today the number of such persons, however, is severely limited, and the candidates are mainly entry level people who, although graduates of maritime or engineering colleges, have only a limited knowledge of the industry.

Because of the worldwide nature of maritime commerce, clients come from many diverse languages and cultures, and to some this clientele offices are located in all friendly maritime nations staffed principally by local nationals. While there are a few expatriates in key administrative positions, the bulk of the day to day work involving plan review and survey is carried out by nationals. Although a certain command of English is expected this is sometimes less than perfect, and even though there may be a good comprehension of the printed word, the intent of the text may remain hidden because of a different cultural background. Consistency in the interpretation and application of the rules and practices of classification throughout the organization is a fundamental requirement for providing a quality service. This is difficult at best even in the U. S. with U. S. nationals working with English texts; worldwide it becomes a matter of great concern and requires training which provides very explicit guidance, and this guidance must comprise not only the technical aspects of the particular discipline, but also it must ensure that there is an understanding of the translation of the printed word to a physical arrangement.

In addition, a changing regulatory environment, new technologies and trading patterns as well as changes in the rules for classification require a constant updating of skills for all members of the field and technical staffs.

Figure 2 which follows illustrates the next step in developing the training program.

- 1) Determine those work processes which fall under ISO 9000; this includes all which relate to the delivery of a product or service to a client.
- 2) Determine and document training and knowledge requirements for each of these work processes.
- 3) Determine status of each person within the work process as it relates to the requirements.
- 4) Prepare a detailed training program to correct deficiencies.
- 5) Establish plan for correcting training deficiencies, status vs. requirements, and control to ensure qualified persons are assigned to tasks.
- 6) Review for corporate consistency.

FIGURE 2 PROGRAM DEVELOPMENT

Please note particularly Item 6 in Figure 2 i. e. "corporate consistency". Too often plans are developed and carried out without regard to consistency throughout the organization: this leads to dissatisfaction for external clients and confusion and frustration for internal clients and an overall degradation in the quality of the service.

PROGRAM REQUIREMENTS

In order to determine and define the training requirements some method of analysing and recording the various tasks carried out in the course of classing a vessel was required.

What has been done was to define certain Work processes. Engineering Review, for example, which was then broken down into categories, procedures and work instructions. To go a little further. Engineering Services which comprises the review of machinery drawings becomes a Category and next under the Procedure heading would come "Electrical & Control Systems," and finally under Work Instructions - One Line Electrical Diagram.

When this has been completed for all processes a great volume of work instructions has been accumulated. From this great volume of work instructions a very clear understanding of the tasks routinely performed and the knowledge and skills necessary to perform these tasks successfully can be ascertained. The work instructions are useful not only for training, but are a tool to be used regularly in the performance of each task.

In drawing review, for instance, an engineer can call up the work instructions for the particular system under study together with the applicable sections of the rules and any other standards or comments that may apply. On a company wide basis this will ensure the maximum in

consistency. As noted earlier many different languages and cultures are represented in the staff and also in the clientele and since the rules and other relevant texts are written in their own language, it is vital that their sense be conveyed to the staffs of other countries in the most explicit form possible. A corollary to this is that formulations of SOLAS (Safety of Life at Sea - 1974 and Amendments) and other international documents are sometimes in a form of English not consistent with US usage.

Having determined what training is required, the next problem to be faced is how it is to be provided. First a range of entry level requirements has been developed. Based on these requirements formal programs for entry level technical and field candidates have been constructed. The training will start with a module covering the history of classification and other informative and administrative subjects.

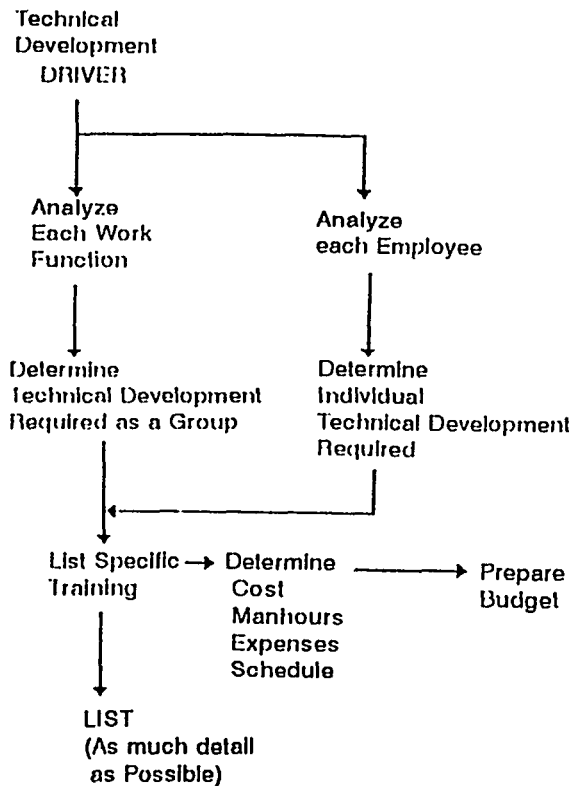
Next come modules covering the rules, survey practices and duties of the engineering and field staffs with instruction carried out by experienced personnel. Although the programs for technical and field staffs will not be identical, both will require that the candidates spend designated segments of time in the technical departments and in the field. Evaluations will be carried out on a continuing basis. At the end of the indoctrination period each candidate will be assigned to a field office or a technical department to continue on the job training in accordance with a schedule to be prepared by the head of the department or field office with modules prepared from the work instructions developed previously. For experienced candidates from the industry an inventory of training modules will be available to supplement or fill any gaps in previous training or experience.

Figure 3 which follows on the next page illustrates the systems analysis for the training function.

Of vital importance in addition to the actual training is the maintenance of an inventory of the skills of each individual employee in such a manner as to make information available on demand.

It is intended that all classification associated training be carried out by in house staff, and the individuals selected to do the training will require training themselves in the substance of the technology, in methods of instruction and in record keeping. Another vital part of the process is the development of training plans and study material.

Outside resources will be used as necessary to assure diversity and to remain in touch with current technology.



**FIGURE 3
TRAINING FLOW CHART**

CLIENT PARTICIPATION

An additional and important goal of the training initiative is to encourage client interest and participation. This is being done today in a limited way, but a concerted effort will be made in this direction. Earlier in the paper mention was made of the many diverse client interests in any given vessel being classed. It is a fact that the better informed each of these clients is with respect to the service to be provided and in the manner in which it is accomplished, the simpler it is to represent their interests. As a case in point, certain functions carried on behalf of the U. S. Coast subject to their oversight. Although not a requirement of the oversight program, training has been offered to their staff which has resulted in a better understanding of how each of the organizations approaches its assigned tasks. Familiarization programs have also been offered to ship operators, underwriters and others with an interest in maritime affairs.

SPECIALIZED TRAINING PROGRAMS

There is a trend for certain professional organizations to provide "certification" for

candidates who have completed a course of instruction and been examined as to their competence in certain special skills; among these are the following

- ASME (American Sw. of Mechanical Engineers) Authorized Inspector
- ASME Supervisor
- ISO Y000 Assessor
- Auditor -Steel Structures Painting Council
- Auditor - American Petroleum Inst. Certifier
- Welding Inspector
- Nondestructive Testing

These certifications are valuable as evidence of proficiency in the respective skills, or they may be required in certain cases (ASME or ISO for instance) for certain tasks. In house training in weld inspection and nondestructive testing is conducted for the staff and clients.

For engineering staff professional registration is encouraged and supported.

BUDGET

In order to provide for the financial and manpower budget a precise breakdown is made for each office worldwide with allocations for the staff to deliver or receive training. This is an important consideration for quality planning in order to prevent manpower constraints from interfering with scheduled training.

CONCLUSION

Training is fundamental to providing a quality service.

Emphasis in this paper has been on the operational and engineering staff, but training is required throughout all parts of the company.

Training is required to remain competitive.

Training is necessary to retain competent staff.

A mixture of classroom and on the job training is considered the best mix.

The training budget should include manpower as well as money allocations.

Training does not come cheaply, but without it the organization will not prosper.

Technology, operational constraints, management practices etc. in the maritime industry are changing constantly; under these conditions it is important to recognize that training does not and must not end after six months or a year or five years, but must continue until the engineer or surveyor retires from active service. This is the program to which the classification societies are committed.

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