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Session 3

Operator Training

Dynamic Positioning Operator Training

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DYNAMIC POSITION OPERATOR TRAINING

HISTORY OF DP OPERATOR TRAINING

Dynamic Positioning, since its inception as a technique in the 1960's, has undergone continual technological evolvement. Along with these continued improvements, system redundancy became a requirement. Today and many operators and charterers are demanding fully trained, qualified and competent operators to run the systems. Formal training schools have been in existence since the 1970's and as with the systems themselves, have undergone similar evolvement to meet the needs of today's operating requirements.

The downturn in offshore activity in the late 1980's caused a lull in construction of DP vessels, scrapping of some of the fleet and the loss of some very capable people to other industries. A significant number of those individuals are permanently lost to the offshore industry are no longer available to operate today's new systems. The current flurry of activity, particularly in the Gulf of Mexico, along with the sustained growth in Brazilian waters has spread the remaining expertise thin and created a demand for the training of new operators.

There are vessel owners building and contracting dynamically positioned vessels for the first time in their history. With little or no in-house expertise in actual operations and at the same time committed to delivering flawless operations, they must train a new cadre of DP operators and supplement the staff with a group of seasoned experts, trained on their competitors hulls. The experienced D.P. vessels owners are experiencing a loss of some of their best operators to the new owners. Also some of the experienced vessel owners had the luxury over the past eight years to train new operators at measured slower pace. They often relied on effective in-house programs to develop a select few. In the current stage of resurgence and expansion in their own fleets, the success of the past O.J.T. (on the job training) programs may not have the capacity to train new recruits to fill new positions and replace seasoned operators lost to other owners. A key group of new and experienced D.P. vessels owners, equipment suppliers and end users (vessel clients), conscious to the realities of today, saw a need for additional training tools and a heightened awareness of DP systems.

Further to the development of the following syllabus and a review of existing shore-side training facilities, the MTS Training Sub Committee has been careful to include a discussion of post certification training with training simulators stationed on the vessel itself.

DEVELOPMENT OF THE M.T.S. (Marine Technology Society) **"DP SYLLABUS"**

Enter the formation of the Dynamic Positioning Committee in 1996. This committee was formed to further industry's knowledge about this accepted and growing technology. One of the first concerns of the committee was the development of a new generation of DP operators who would man the next generation of new builds and vessels undergoing complete refitting and upgrading. The committee appointed a Training Subcommittee to review all existing courses being taught internationally and promulgate a syllabus encompassing course material meeting recognized IMO standards for DP Operator Training and expanding on these to better serve industry demands. The committee also identified the fact that there was no recognized and or "approved" training facility in the America's.

The Training subcommittee consists of a cross section of the industry's oil companies, drilling contractors, vessel contractors, service companies and DP system manufacturers.

Vessel owners on the Training Subcommittee range from those with a long history of Dynamic Positioning (DP) experience, those with prior DP vessels that are re-entering the market, to those owner's of new builds with no prior DP experience. A number of DP vessel owners, with excellent DP reliability records, who in the past had used in-house training programs as a sole source of DP apprenticeship were represented.

The vision of the group was to develop a syllabus that would meet regulatory guidelines and encompass current knowledge of modern DP systems, include a significant expansion of the topics addressing drilling operations, pipe laying operations, diving operations and crisis management. The MTS approved syllabus will be used by vessel owners, operators, charterers and equipment suppliers as a guideline for enhancing existing curriculums at approved facilities and accreditation of new facilities. The syllabus will also serve as a guideline for those vessel owners that chose to supplement post training school experiences with continued training on the specific vessel or for those companies that will continue to rely on a complete in-house training program. The committee was careful to include topics previously taught by certain owners, at their in-house programs, to ensure that new syllabus met the requirement of those select companies that had not previously relied on industrial training facilities.

The subcommittee ultimately developed a separate syllabus for DP Familiarization, DP Induction and DP Simulation Training. The syllabus will serve as a tool for further development of a training program for the "Team" on board the vessels. The "Team" would be comprised of the vessel Master, DP Operator, Chief Engineer, Watch standing Engineer and the industrial personnel such as the Subsea engineer, pipe laying supervisor, toolpusher, driller or diving superintendent as appropriate.

To this date the syllabus for the Familiarization, Induction and Simulator courses have been developed and approved. The detailed syllabus is attached in the Appendixes.

FAMILIARIZATION COURSE

COURSE DESCRIPTION - The familiarization course on Dynamic Positioning (DP) is intended to provide a general understand of how these positioning systems are used in the maritime industry. It provides insight into the control systems, vessel sensors and how position referencing systems operate. It will describe the system's components, how they interact and possible results due to failure of one or more components. There will be some discussion of the various Societies that set standards for DP systems and different applications for DP systems.

WHO SHOULD ATTEND - Attendees would have little to no working knowledge of DP systems. They might be part of a larger project in which DP plays a critical role. Completion of this course would not qualify an individual to operate or make a decision in the operation of a DP system.

INDUCTION COURSE

COURSE DESCRIPTION - The Induction Course on Dynamic Positioning (DP) will provide an in-depth understanding of the positioning system as it is used to compensate for vessel movement. It will cover vessels' DP referencing systems, sensors, power plants, thrusters and feedback systems. While the course reviews material that was covered in the familiarization course, it goes into much more detail. The course will cover theories of redundancy, communication with the bridge, drill floor, and other vessel operations. Failure scenarios and simulator exercises should be covered on the final day.

WHO SHOULD ATTEND - Attending the DP Familiarization Course is not a prerequisite. A candidate should have a certain level of practical experience with electronic equipment, and knowledge and experience with marine operations. Upon completion of this course, an operator should be able to complete 60 - 90 days of supervised DP operation, therefore familiarization with a vessel's operation would be necessary. There will be some discussion of the various Societies that set standards for DP systems and different applications for DP systems.

SIMULATION COURSE

COURSE DESCRIPTION - The Simulation Course on Dynamic Positioning (DP) will provide the student with basic overview of material covered in the Induction Course. If the students understanding of a vessel's DP referencing systems, sensors, power plants, thrusters and feedback systems is adequate, then the instructor should continue to simulated exercises as soon as possible. Simulated exercises should cover as many practical situations as time allows.

WHO SHOULD ATTEND - Attending the DP Induction Course is a prerequisite to taking the Simulation Course. A candidate should be competent in DP basic concepts, control theory, vessel equipment and operation prior to attending the simulation course. Upon completion of this course, the Induction Course and 60 - 90 days of supervised DP operation, the student should be ready to begin DP operation unsupervised.

REGULATORY GUIDELINES AND ACCREDITATION

The following is a brief summary of international organizations involved in establishing training guidelines for Dynamic Positioning System Operators, as well as institutions who approve/accredit D.P. Training facilities.

THE NAUTICAL INSTITUTE (N.I.)

The Nautical Institute is a U.K. professional association consisting of approximately 6000 Merchant Mariner members. Although the Institute has no legislative or legal authority, they are considered and utilized by legislative groups as an authority on maritime issues.

The Nautical Institute has been given authority in the U.K. to validate, accredit, and approve Dynamic Positioning System training courses.

The International Maritime Organization (IMO) has adopted the Nautical Institute D.P. training guidelines as the international standard for the training and certification of Dynamic Positioning System Operators.

INTERNATIONAL MARINE CONTRACTORS ASSOCIATION (IMCA)

The Marine Division of IMCA consists of oil drilling, diving, oil production, offshore marine construction, pipe laying, survey, and exploration companies. The work of the Marine Division, although traditionally station keeping, has expanded to cover other items of operational importance such as cranes, fuel oil contamination, ballast control and training.

The IMCA has adopted the basic D.P. training guidelines formulated by the Nautical Institute, and has published same titled; "The training and experience of key D.P. personnel". D.P. Operator Log Books are available for purchase from both the IMCA and the Nautical Institute.

INTERNATIONAL MARITIME ORGANIZATION (IMO)

The IMO is an international convention of approximately 19 major maritime countries.

Training standards are adopted by the IMO subcommittee on Standards of Training,- Certification, and Watch keeping (STCW). The IMO has basically adopted the D.P. training guidelines promulgated by the IMCA and N.I. as the international standard for the training of Dynamic Positioning System Operators.

The basic training guideline for D.P. Operators is as Follows:

1. Completion of a four day (24 hr.) shore based D.P. "Induction" course.

2. A minimum of 30 days on the job training as a trainee aboard an operating DP vessel.
3. Completion of a four day (24 hr) shore based D.P. "Simulator" course.
4. Six months additional time as a trainee aboard an operating D.P. vessel.

ACCREDITATION OF TRAINING FACILITIES

Accreditation is achieved through the Nautical Institute or the IMCA. A training institution desiring accreditation is required to submit the following documents;

1. Instructor qualifications/ experience
2. Course objectives
3. Course Subject Matter Outline
4. Training Syllabus
5. Copy of Course Manual
6. Exams, and or student evaluation forms
7. Training course evaluation forms
8. Record keeping and reporting scheme

After review of the training course material, the training facility must then undergo an audit during an actual class presentation.

VESSEL OWNERS PHILOSOPHY FOR DP OPERATOR DEVELOPMENT

Each vessel owner/operator should have a formalized philosophical guideline for development of DP operational personnel. While individual companies will vary on their recruitment and selection criteria there needs to be a torch carrier with a passion for DP operations and personnel. During the early development of DP systems electrical engineers, electronic technicians and electricians made up a portion of the DP operator compliment. Those early vessels had DP operations that were segregated for the ships navigation centers (bridges). Today's newly delivered DP systems are more operator friendly, reliable and encompass further levels of redundancy. Most new vessels incorporate the DP consoles in the navigation centers.

With new enhancements the industry is seeing more masters and mates filling the DP operator positions. Two owner's philosophies are provided for consideration.

FALCON'S APPROACH TO TRAIN DPO'S

Falcon has made a policy decision to have all DPO's certified Deck Officers with unlimited certificates of competency issued by recognized administrations, and in compliance with STCW 78/95. This has been done so that the vessel is always in compliance with the safe manning requirements.

The training that Falcon envisages for its requirements, is an apprenticeship type, on board training, with appropriate formalized class room type instruction being provided at suitable intervals, on board vessels or ashore as the case may be. The ideal candidate for such training program would be a graduate from an approved maritime academy/college, who has at least a certificate of competency as a third mate. It is anticipated that the period of apprenticeship would be a minimum of 18 months, with at least nine months spent on board a vessel operating in DP mode. The apprenticeship is not limited to DP operations alone, and is designed in a manner that upon successful completion of the apprenticeship, the individual would be able to be classified as a second mate/DPO, after proving his/her competency through written practical and oral tests, provided the person has acquired the requisite time and appropriate certificate of competency to serve as 2nd mate.

It is envisaged that this will provide an individual a promising career path, as it would fully cater for advancement to ultimately be suitable to serve as a Master on board the Company's fleet of ships.

The apprenticeship would revolve around a curriculum designed to enable the individual to acquire a complete overview of all aspects of ship board operations within the drilling industry, and also specialize within his chosen field, namely deck and DP operations. Continued Competency would be tested at periodic levels by on board testing by appropriately qualified individuals. Realistic computer simulations will be carried out not only for the training of apprentices but also to improve on the skills of experienced DP operations. The operational philosophy and commitment of the company to further the knowledge and competence of its personnel, has already been demonstrated by setting in place a policy which enables marine officers and engineers pursue their higher certificates of Competency, in what is, without a doubt, if not the best, one of the best within the industry.

READING AND BATES APPROACH - TRAINING DP OPERATORS FOR THE NEW FRONTIER

It is the belief of Reading & Bates that deep water is the new frontier for oil and gas exploration. This has been proven based on recent lease sales in the Gulf of Mexico and major finds have been located in South America and West Africa as well. Much of this activity will be conducted utilizing vessels with Dynamic Positioning capability and there is presently a labor shortage for qualified DP Operators. Maritime Academies have been reluctant to view oil and gas exploration and production as a bonafide industry in which to place maritime personnel. This is an industry problem, which cannot be alleviated by paying additional wages.

A blend of formalized shore base training in tandem with on-the-job training programs can accelerate the process of training competent personnel requiring the skills of Dynamic Positioning. By following recognized international standards, such as IMO, this approach can create a level playing field to train, not only those needing the skills but those needing to be cognizant of DP Operations such as drilling and production personnel.

Reading & Bates is reacting to the shortage by developing the following initiatives:
Working additional personnel on our current DP vessels who have a license equivalent to Second Officer.

Utilizing existing Control Room Operators (CRO's) from our Semi-Submersibles and training these personnel in North Sea schools while working them on DP vessels. Assistant CROs are being trained in tandem with this initiative to provide the necessary redundancy.

We are working with military outplacement centers to find personnel who possess similar skill sets.

A set of standardized procedures for DP Operations is being undertaken which will denote critical skills, which must be mastered to insure competency. Critical tasks will have training modules defined and will parallel our operational and maintenance procedures. The system will be set up so that validation can be audited.

Suitable candidates will attend accredited schools to recognized standards. Ideally, Reading & Bates would like to see educational institutions get involved with funding coming from course tuition, vendor involvement and industry backing.

Reading & Bates is developing a drilling school that will provide DP Operators and other license personnel with an understanding of drilling operations that could affect DP Operations.

As the majority of our DP Vessels will be FPSOs or Tanker type Drillships, we are providing additional duties in the job brief that will allow the DP Operators to get away from the screen to avoid factors such as fatigue. These will include transfer operations, re-fueling operations, stability operations and valve maintenance for stability and tanker operations.

A Maintenance School will also be conducted for Electronic Technicians and will focus on DP Operations.

Long-term career growth will be very important for DP Operators and those wishing to move up through the ranks must see upward mobility. We believe DP Operators will be able to work on license upgrades over time and be promoted to Chief Officer and onward to Masters.

A shortage of DP Operators could compromise the safety of deepwater operations so industry must pull together to create a competent pool of labor who will be challenged and satisfied with the opportunities in this growing environment.

SHIPBOARD SIMULATORS, SHIPSIDE TRAINING AND RECURRENT TRAINING

INTRODUCTION

Good afternoon/morning ladies and gents, as Greg has informed you my name is Ron Murray and I am the President of a Marine Consultancy Company called C-MAR services, the company has its head offices in Aberdeen with other offices in Houston and the East coast of Canada. I will give you a very brief outline of the company and its' specific expertise so that you will understand why I have been nominated for this particular section of the presentation.

C-MAR is an offshore support service company, primarily concerned with supplying marine consultancy and personnel to the Dynamically Positioned vessel owners. We have been involved with the DP market since the late seventies and our experience covers nearly all aspects and applications of Dynamic Positioning. We carry out the technical side of Dynamic Positioning performing DP audits, FMEA's and investigating DP 'Incidents', we also proffer logistical support by supplying anything from one person to a complete crew to assist DP vessel owners with the operation of their vessels.
At any one time we supply approximately 150 Senior DP personnel to about 15/20 DP vessel owners, it depends a lot on the time of year and the seasonal impact on DP operations.

INHOUSE AND ON THE JOB TRAINING

My remit today is to address the training of DP personnel by utilizing 'in-house' training and 'on the job' training, i.e. by either training the personnel on a simulator normally situated at a Companies Head office or by supplying the training equipment and course material to the vessel on its' work location.

With this in mind I would like to present you with our view of current training facilities and requirements for the industry as a whole.

(Background info to establish why training is required)

THE VARIABLES INVOLVED IN DYNAMIC POSITIONING EXPERTISE

Vessel types and Applications

Semisubmersibles

You will understand that all the various vessel owners have different types of vessels in their respective fleets, there are semi- submersibles (drilling, diving and heavy lift units) three totally different aspects of the same thing - one requires that you maintain

the vessel in one place above a well that could be 10,000 feet below you on the sea bed; one requires that you are very agile on location and can follow the instructions of a diver on the seabed somewhere between 300 and 1,000 feet below you and the third requires that you hold precision positioning while a heavy lift is set in down. Two applications are static - with drilling you remain within a certain allowable range of a set point and are probably fixed to the seabed with a Marine Riser system and BOP, with a heavy lift you are required to hold very tight limitations on the vessel excursion while the lift is landed exactly in place and the third application is mobile - you follow a diver on the seabed wherever he goes. In these instances we are using the same kind of units, maybe even the same DP systems - but we have three very different skill requirements for the actual DP operators.

Monohulls

Monohull vessels have the same diversity of applications, they have divers down (requiring the vessel to be very mobile), they lay steel pipelines from reels (the vessel moves in 40' sections and then waits on a weld being completed, all stop and go activity with particular importance on the tensioner unit so that the pipeline is not smoothly with a controlled tension on the cable), they are drillships (fixed to a set point), they are used as bases for ROV operations (following pipelines, doing platform surveys, etc.) - all very different applications but all using the same basic Dynamic Positioning control system.

Vessel Classes and differing levels of responsibility

The second variable in the use of Dynamic Positioning is the Class of vessel being used - is it a Class I, II or III vessel - again very different responsibilities and requirements for the actual DP operators.

Class I can be a single operator on watch following an ROV in open water - no possibility of loss of life or structural damage or danger of massive pollution. No real significance if there is a single point failure and the vessel loses position - she will just drift away and hopefully the ROV crew will recover the ROV under their own power.

At the other end of the spectrum, Class III can be with a diver in the water either in a habitat whilst welding or working on a valve inside the confines of a platform - definite possibility of loss of life if the vessel does not maintain position. Two people are required on watch together and redundancy in all Dynamic positioning equipment and sub-systems is required.

The heavy lift ship lowering the topsides onto a newly constructed platform - instability in the Dynamic Positioning capability can affect the load and there is the distinct possibility of the unit touching the platform with ensuing massive financial repercussions.

Drilling while in the pay zone, FPSO's Floating Production, Storage and Offloading units, Shuttle tankers - all with the distinct possibility of causing massive pollution.

Type of DP equipment and Manufacturers logic

The third variable is the make of system that the Operator has to be familiar with. There are three major manufacturers of DP systems- Simrad, Nautronix and Cegelec. They all do basically the same thing but can have widely differing control desks.

With all the aforementioned in mind, how do we ensure that the DP Operators are trained for the particular task in hand?

EXISTING TRAINING

The existing Certified training for DP Operators, which has been built up over the last 10/12 years, involves a combination of hands-on learning with two 4-day sessions at an official approved and accredited training school.

The system is based on an initial 4 day induction course followed by a 30 day period on a vessel with practical hands-on DP experience being gathered, then there is another 4 day college period when the Operator undergoes a Simulator course during which he will learn the consequences of the various control system failure modes and will be taught the in-depth principles of Dynamic positioning.
This is then followed by a further 6 months practical hands-on experience on the ship and our DP operator will then get the Master of the vessel to sign off that he has completed the course proficiently and he will send off his training records so that he can obtain his DP Certificate.

The certificate he will be granted will be either an unrestricted Certificate or a limited certificate restricting him to further supervised training as the class level of his ships increases. I.E. the ROV vessel operator would not be allowed to take over the Heavy lift ship without a further period of supervised training.

CURRENT TRAINING ALTERNATIVES BEING CONSIDERED

'In-house' Simulator training

As an alternative to the expensive formalized training that is on the market some DP vessel owners have actually bought their own DP Simulators and are in the initial stages of setting up their own DP Training courses, generally in their respective head office.

One of the reasons (besides the expense of the colleges) is because they require their DP Operators to be proficient in their own application of DP, i.e drilling, cable laying, heavy lift or whatever and they require that their operators are familiar with their own DP system, whichever of the three Brand systems that it happens to be.

The manufacturer of the system will sell the owner a Similar training station and computer program whereby their particular vessel characteristics are the heart of the program and the simulator buttons are the same as on the vessel - so that what the operator practices on is actually what he will be operating in the field. This is specific targeted training.

Compare this to at college where he may learn DP on a Simrad system and then go into the field and find a Nautronix or Cegelee system on his ship – this is Generic DP training.

But this alternative to the colleges involves a serious commitment by the owner as there is a fairly substantial capital outlay to purchase a simulator and the associated training software and it also involves obtaining the services of a skilled and experienced Dynamic Positioning trainer and the writing of an acceptable training course with industry acceptable simulator content.

Where does this training person come from? Is he to be contracted in or be put on the corporate payroll? How many people does the Company require him to train? What is the anticipated loss rate of Dynamic positioning personnel and the retraining requirement? To what standard does he train the companies' personnel? What course work does he use? Is the course to an industry approved standard? Will the **Client** accept the level of 'in-house' training.

The corporate and financial implications of these questions are for the individual vessel owner to analyze and resolve. i.e is training financially viable? and can we afford to have this specialist person on our payroll? What else can he do?
The Dynamic Positioning implications are already outlined in the various industry approved publications.

The standard of equipment and the recommended course content to be used are already published and the owner must decide whether he wants (or needs) Industry acceptable Certificates for the DP Operators.

To gain acceptable Certificates the training equipment (both Hardware and Software), the complete Induction and Simulator syllabus and the trainer must first pass the scrutiny of an Accreditation body and must agree to be audited on a regular basis to confirm the maintenance of training standards.

'On board' trainer and simulator

A further consideration and a method currently under industry scrutiny is to train the Operators on the actual vessels. This requires an On board simulator and the presence of an experienced trainer.

How can this be achieved??

To activate a DP system as either a trainer or a simulator first it must not be required to actively be controlling the positioning of the vessel or be acting as the back up system in a dual redundant setup.

Thus it can only be achieved by a single or dual redundant system being actively offline, i.e. the vessel is not actually working for some reason and the systems can be put into training mode.

Or we have a triple redundant system where the third system can be disconnected from the dual redundant section and can then be set up as a Simulator.

Both these options are heavily dependent on the current operation of the vessel and therefore careful planning will need to be made to identify suitable training 'Windows'.

Once again, for Certification requirements, an accredited trainer will have to be taken to the vessel, approved course material and content will have to be supplied and the owner will have to abide by the strict training criteria and timetables published in the guidelines.

Advantages to these two systems:-

The people learn on the equipment to be used
They use the software of their specific unit
The training is vessel specific
They can undergo refresher training at any time at relatively little expense.

ON GOING VESSEL TRAINING AND RETRAINING

With an onboard simulator the training of new personnel and retraining of personnel from a different type of vessel is relatively easy. At opportune moments the simulator can be set up and the allowable hours can be used with the new person being supervised by the experienced crew as he works through the program.

If there is no on board simulator then training of new personnel has to be done ashore at either the 'in-house' course or at an accredited School. Retraining of personnel from different vessels can be achieved by either hiring them as junior DPOs' or by carrying them as extras during existing contracts. This way they can accumulate the necessary number of hours by acting as either the junior DPO with the hands-on approach or as an observer prior to becoming a junior DPO on his next tour.

REFRESHER TRAINING

For a DP vessel owner with a regular crew and a specific methodology of operation the need for retraining the DP crew is seen as negligible.

This view changes however when the crew turnover is high due to either conditions on the vessel, or large differentials in the levels of pay available at the time. At this juncture the owner may well be faced with the prospect of having DP Operators who have not experienced his particular operation before (it may be heavy lift operations, over the side 'J' laying of pipe, etc.) but he may find that to satisfy the Client he will be forced to finance some specific DP Training, either at one of the colleges or by taking an experienced trainer onto the vessel as an operator.

RELATIVE NUMBER OF CERTIFIED DPO's

Since the accredited Certification of DPOs commenced in 1985 the total number of Certificates issued by the Nautical Institute stands at 902 on the 22nd September 1997.
The Norwegian Maritime Directorate has issued approximately 250 Certificates over the same period. There are now very few people left in the industry who have not obtained an accredited Certificate.

Client pressure all over the globe has resulted in the Certificate being of paramount importance when hiring any Dynamic Positioning Operator.
We see that a total of 1150 Certificates have been issued over a period of 12 years, that is less than 100 per year - what is the rate of attrition? How many leave the industry every year? How many are there like me who have a Certificate but no longer use it in a practical manner?

How many do we need for the future? How many do we need right now?

There is a dramatic call on the available personnel right now with a whole new generation of DP vessels being constructed - each vessel needs ten certified DP personnel to cover it's own requirements. All the new ROV and special Supply boats fitted with simplex DP systems need Certified people. All the shuttle tankers being built have new systems - where is the pool of marine competent trainable people????

C-MAR and several of our Clients have studied this problem and found that the conventional marine industry is the logical place to recruit new personnel into the industry. But DP vessel owners must realize that these mariners, if we can tempt them, already enjoy a high income level and superb benefits and they are not going to give away what they see as their due package.

CONCLUSION

On-board Simulator training can be viable for any vessel with the Class III DP system where the third element can be isolated and used as a Simulator (depending upon the criticality of the operation at the time).

On-board Simulator training is probable not viable for any vessel without a Class III system.

In-house training can be undertaken by all companies with DP vessels (bear in mind the cost of equipment, course content, experienced trainer, etc.).

Regular school training is available to all the owners, either in Norway, the UK or here in Houston (once accreditation is gained).

WORLD WIDE TRAINING SCHOOLS OFFERING D.P. "INDUCTION" AND "SIMULATOR" COURSES.

Name: **Aberdeen College**
IAN Giddings, Marine & Offshore Technologies
Gallowgate Centre, Gallowgate, Aberdeen, Scotland, AB25 1BN
Ph: (01224) 612000 Ext 2154
Fax: (01224) 612001

Name: **Cegelec Projects**
Marine Systems
Boughton Road
Rugby
Warwickshire, U.K. CV21 1BU
Ph: 44 (0) 1788 563563

Name: **Nautronix, Inc**
Technical Training Center
6611 Portwest drive suite 120
Houston, Tx. 77024
Ph: 713-880-2866
Fax: 713-880-2734

Name: **Simrad Albatross AS**
Training Dept.
PO Box 483
3601 Kongsberg
Norway
Ph: 47 (0) 32 865000

Name: **Lowestoft College**
Maritime and Offshore Center
St. Peters Street
Lowestoft
Suffolk, U.K. NR32
Ph: 44 (0) 1502 583521

Name: **Høgskolen Stord/Haugesund**
Ph: 47 5270 2600
Fax: 47 5270 2601
Trade: Nautical college
Accreditation: Preliminary accepted for DP training by Norwegian Maritime Directorate. Not yet validated by the Nautical Institute Validation Committee.
Courses: DP Induction courses
Facilities: Cegelec DPS-902

Name: **St. John**
Trade:
Accreditation: Not yet validated by the Nautical Institute Validation Committee.
Courses:
Facilities: Cegelec DPS-902 Interfaced for ship maneuvering systems

Name: **SMS Trondheim**
Ph: 47 7351 1411
Fax: 47 7351 1432

TRAINING SCHOOL DETAILS

Name: **Aberdeen College**

Trade: Nautical College

Accreditation: Accepted for DP training by Norwegian Maritime Directorate and Nautical Institute

Courses: Introduction (Familiarization) to Dynamic Positioning.
Induction courses.
Simulator courses.
DGPS Thruster Assisted Mooring Systems TAMS
On board DP courses to Client Specification
DP Training Consultancy

Facilities:
ADP 503 MK II – Dive Support & Semi-Submersible Drilling Models
GEC GEM 80 Duplex

Name: **Aberdeen College (cont'd)**

Cegelec 800 & 900 Duplex Simulators for Semi's, Single & Twin Screw Shuttle Tankers, ROV vessels and cable and dive support ships

Name: **Cegelec – Rugby England**

Trade: Equipment Manufacturer

Accreditation: Not accredited by IMO

Courses: Duplex DP system operator training – 5 days
Duplex DP system maintenance – 5 days
Duplex DP system software training – 5 days
ICS/PMS system operator training – 5 days
ICS/PMS system maintenance training – 5 days
ICS/PMS system software training – 5 days

Facilities: Cegelec DPS-902 and contract equipment per the system configuration including DP consoles, outstations, environmental sensors and position measurement systems.

Name: **Kongsberg Simrad AS**

Trade: System supplier

Accreditation: Accepted for DP training by Norwegian Maritime Directorate and Nautical Institute

Courses: Introduction to Dynamic Positioning.
Familiarization for certified operators on ADP 70x and SDP.
Induction courses on ADP 70x and SDP.
Simulator courses on ADP 70x. SDP early next year.
Special courses on request, for any system or function supplied.
ATA Operators courses on APM3000, APM70x, ADP/PM70x, SDP and SDPM.
ATA Certification courses on APM3000. SPM and SDPM early next year.
Operators courses on AVC and SVC covering Ballast control, Bilge control, Power management, Thruster control
Standard operators courses on process control systems AIM.
Application related operators courses on process control
systems AIM.
AIM Configuration courses
Operators courses on Seatex GPS/DGPS/DARPS
Operators courses on Artemis Mk 3 and 4
Operators courses on Simrad HPR 300, 400 and HiPAP
Operators courses on Fanbeam
Maintenance courses on KS500 based systems: ADP503, 311 and APM 3000. ADP503/311 courses run in Lowestoft college by Kongsberg Simrad.
Maintenance courses on SBC 1000 based systems: ADP 100,
ADP703

Name: **Kongsberg Simrad AS (cont'd)**

rev. 0 and AIM1000.
Maintenance courses on SBC 2000 based systems: ADP 700, ADP 701 rev. 0 and AIM.
Maintenance courses on SBC 3000 based systems: ADP 701/702/703, APM 801, ADP/PM 701/702/703, ATC and AIM
Maintenance courses on SBC 400/COS based systems, SDP, SPM, SDPM, STC, SVC and AIM
Maintenance courses on HPR 300, 400 andHiPAP systems,
We arrange maintenance courses on Seatex GPS, DGPS and DARPS, Artemis Mk3 and 4, Fanbeam, Taut Wires, UPS
Staff: The training dept. is a organized under Customer Support. The training department staff is at present seven people. Three full time instructors on marine equipment, two full time instructors on process control systems and two in administration.

Facilities: From December 1997
Four classrooms whereof two with six operator stations for SDP, SPM, SVC.
One classroom in connection with ships bridge for DP simulator courses. The bridge is equipped with redundant a SDP 22, STC and SVC with vessel simulator and a ADP/APM 702 with vessel simulator.
APM 3000 with vessel simulator.
HPR 300 and 400,
Artemis Mk 3 and 4,
Fanbeam

Courses 1997: Courses related to positioning systems.

15 DP familiarization and intro courses
26 DP induction,
9 DP simulator.
12 DP maintenance courses
8 PM operators courses
2 PM advanced operator courses

History: The first organized training of DP operators began in 1980 by Kongsberg Våpenfabrikk, now Kongsberg Simrad. It was started by Mr. Rune Mellum who even in his retirement is actively still running courses. He developed and ran one week operators courses which were first based in Horten at Norcontrols site there. In January 1982 the training center in Kongsberg was opened, where maintenance courses are also taught.

Name: Kongsberg Simrad AS (cont'd)

In 1980, Mr. Mellum delivered a speech at an offshore seminar in Aberdeen about Kongsberg's training strategy. This started the discussion regarding formalized training arrangement for DP operators. The training was subsequently started by the Nautical Institute in 1982 and later adopted by the Norwegian Maritime Directorate.

The original Nautical Institute training program was based on and is similar to Kongsberg's present training program. Kongsberg has established a good working relationship with both Norwegian Maritime Directorate and Nautical Institute. The training institutions are validated regularly by a committee consisting of authorities, Nautical Institute, Norwegian Maritime Directorate and representatives from the different training institutions.

In 1982 Kongsberg sold a ADP 503 system to Lowestoft College and trained their instructors to operate it. Another ADP 503 system was later delivered to Haugesund in 1984 and Kongsberg trained their instructors as well. Haugesund conducted training courses for years before closing their DP training facility.

The training: The DP operator training is a requirement of the British and Norwegian authorities. The training program is general, and allows for operation of any type of DP system. Kongsberg recommends that oil companies require that certified operators attend a familiarization course before they are allowed to operate new systems.

The DP operator training consist of several parts.
One week DP induction course
30 days practice onboard a DP vessel where the candidate shall be familiarized with a number of items.
One week advanced DP operators course
Six months practical experience from a DP vessel.

Regulations: For more information refer to the following:

- Norwegian Maritime Directorate Guidelines and notes no. 23.
- Norwegian Maritime Directorate or Nautical Institute DP operators log book.
- IMCA The training and experience of key DP personnel. This document has been referenced as an industry standard by IMO.
- Norwegian Petroleum Directorate / UK Department of Energy: Guidelines relating to specification and operation of dynamically positioned diving support vessels 1 may 1983.

Name: **Lowestoft College**
Trade: Nautical College
Accreditation: **A**ccepted for DP training by Norwegian Maritime Directorate and Nautical Institute
Courses: Introduction to Dynamic Positioning.
Familiarization on ADP 503, ADP 70x and SDP.
Induction courses on ADP 503, ADP 70x and SDP.
Simulator courses on ADP 503, ADP 70x. SDP early next year.
DP shuttle Tanker Course
Maintenance courses on ADP503 These courses are run by a instructor from Kongsberg Simrad.
Specialized training on most DP vessels tailored to the owner needs.
Facilities: Classrooms and instrument rooms.
ADP 503 with vessel simulator.
ADP 702 with vessel simulator.
SDP 22 with vessel simulator.
HPR 310

Name: **Høgskolen Stord/Haugesund**
Trade: Nautical college
Accreditation: Preliminary accepted for DP training by Norwegian Maritime Directorate. Not yet validated by the Nautical Institute Validation Committee.
Courses: DP Induction courses
Facilities: Cegelec DPS-902

Name: **St. John**
Accreditation: Not yet validated by the Nautical Institute Validation Committee.
Courses:
Facilities: Cegelec DPS-902 Interfaced for ship maneuvering systems

Name: **SMS Trondheim**
Trade: Training
Accreditation: Preliminary accepted for DP training by Norwegian Maritime Directorate. Not yet validated by the Nautical Institute Validation Committee.
Courses: Ships maneuvering and Dynamic positioning
DP induction courses
Special courses for Statoil Transport relating to offshore loading.
Facilities: Ship maneuver simulator
ADP 100 interfaced to the ship maneuver simulator
ADP 702 interfaced to the ship maneuver simulator
Cegelec DPS-902 interface to ship maneuver simulator