



DYNAMIC POSITIONING CONFERENCE
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TRAINING

**Improving the Initial Training and
Certification of Dynamic Positioning Operators**

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INTRODUCTION

In 1984 after consultation with industry and other interested parties a dynamic positioning operator's training scheme was introduced to ensure that new entrants to this section of the maritime industry received some training. In the intervening 20 years significant changes, and hopefully improvements, have been made to the scheme.

DYNAMIC POSITIONING OPERATOR TRAINING MILESTONES

1982	Seminar "Dynamic Positioning Operator Training and Qualification" held by the North of Scotland branch of the Institute
	Guidelines for the Specification and Operation of Dynamically Positioned Drilling Vessels published by the Department of Energy
1983	Guidelines for the Specification and Operation of Dynamically Positioned Diving Support Vessels published by the Department of Energy and the Norwegian Petroleum Directorate (NPD)
1984	"Dynamic Positioning Operator Training" 1 st edition published
	First DP training centre accredited by the Institute
1987	M1292 "Training and Qualification of Masters and Officers of Vessels Controlled by Dynamic Positioning (DP) Systems" issued
1993	Norwegian Maritime Directorate (NMD) Guidelines and Notes No. 23 "Certification of DP-Operators" published
1994	Limited DP Operator certificates introduced by the Institute
1996	IMO MSC/Circ.738 "Guidelines for Dynamic Positioning System (DP) Operator Training" published
	International Marine Contractors Association (IMCA) M117 The Training and Experience of Key DP Personnel published
1999	"Dynamic Positioning Operator Training" 2 nd edition published
2001	Reduction in required DP watchkeeping experience through completing extensive DP simulator training recognised
	Dynamic Positioning Operator certificate database commissioned
2002	Institute's Guidelines on Accreditation and Validation published
	Dynamic Positioning Operator's training logbook revised and reprinted
2003	DP vessel database development commenced
2004	Twenty seventh DP training centre accredited by the Institute
	Dynamic Positioning Operator's training logbook revised and reprinted

MEETING THE NEED

The first stage, for the Institute, in developing the scheme was the seminar "Dynamic Positioning Operator Training and Qualification" held in Aberdeen in late 1982. As a result of this seminar the North of Scotland branch establish a working party whose members were drawn from across the industry with the following terms of reference: -

1. To define the responsibilities and relationships between government departments concerned with training, qualification and safe working practice offshore on DP vessels.
2. To recommend the proper qualification and safe working practice offshore on DP vessels.
3. To suggest a programme of training for such personnel.
4. To submit via The Nautical Institute findings and recommendations to the Department of Transport concerning the type of qualification required.

5. To promote international interest in the subject.

The work of this group resulted in the publication of the monograph “Dynamic Positioning Operator Training – Meeting the need” in 1984. This set out a brief description of dynamic positioning, introduced the new training scheme and outlined the requirements for centres wishing to be approved by the Institute as an accredited DP operator course provider within the scheme.

ROUTES TO DP OPERATOR CERTIFICATION

The flowchart below shows the routes from the initial training course through to the issue of the DP certificate. From this it can be seen that the DPO training scheme is a partnership between the industry, the training centres and the Institute.

The Institute’s role in this is to carry out the accreditation of DP training centres in accordance with its guidelines on the subject and to process the logbooks and issue the certificates. The training centres’ role is to provide the required courses and the industry’s role is to ensure that the sections of the logbook are completed accurately and appropriately. The most critical of these is probably Section F: Suitability of officer to undertake full watchkeeping responsibility on board a DP vessel.

F. SUITABILITY OF OFFICER TO UNDERTAKE FULL WATCH-KEEPING RESPONSIBILITY ON BOARD A D.P. VESSEL

I, Captain _____ verify that

M _____

has completed the D.P. Operator’s Log Book to my satisfaction and in my opinion is competent to undertake D.P. Watchkeeping duties, and in particular

- i) Possesses an adequate knowledge.
- ii) Knows the underlying principles of DP.
- iii) Can take control of the DP system in normal operational conditions.
- iv) Understands what to do in an emergency.
- v) Understands the operational procedures on board and can safely operate the vessel’s DP system.

Operator’s Signature _____

Signed _____

Date _____

Ship’s stamp

On completion of the Log Book and satisfactory completion of the relevant courses a D.P. Operator’s Certificate will be issued by The Nautical Institute. The Operator should forward his Log Book to: The Education and Training Manager, The Nautical Institute, 202 Lambeth Road, London SE1 7LQ.

Figure 1: Section F of the logbook

This is an important final assessment in the certification process and it is essential that Masters who may complete this understand their responsibilities. These are clearly stated on that page of the logbook and have been made the subject of an IMCA Information Note M08/01.

However equally important are Section C: Seagoing Familiarisation Watchkeeping Log in which certain tasks are required to be completed to build upon the underpinning knowledge gained during the Induction/Simulator course and Section E: DP Watchkeeping Experience in which this experience should be accurately recorded to ensure the correct level of certificate is issued to eligible persons.

At the start only DP Class 2, and at that stage this was generally interpreted as vessels fitted with a redundant or duplex DP system, was considered. However a demand for a certificate for those operating on Class 1 vessels was recognised and in 1994 a modification to the scheme was made so that those serving exclusively on DP Class 1 vessels could be awarded a Limited DP Operator's certificate. In recent years this has been further complicated by the fact that many companies now operate fleets which have both DP Class 1 and Class 2 or 3 vessels as well as DP Class 0. Thus the training scheme has been further amended over the years to recognise the DP time of those whose DP service is a mixture of DP class 1 and DP class 2 or 3. The core DP time requirement for the issue of a certificate is for six months DP Class 2 or 3 time or equivalent where two months' DP Class 1 time is equivalent to one month DP Class 2 or 3 time. However, in the case of mixture of DP classes, a minimum of two months' time on DP class 2 or 3 vessels together with a statement of suitability (Section F of the logbook) from the Master of a DP class 2 or 3 vessel on which that person has served are required.

This flowchart will also shortly be amended to illustrate the reduction in DP time for attending intensive DP training or completing the Dynamic Positioning Competence Assurance Practice (DP CAP™) programme. The former was incorporated into the scheme in 2001. This grants reductions in the DP watchkeeping time necessary for certification providing certain conditions are observed. The reductions are as follows: -

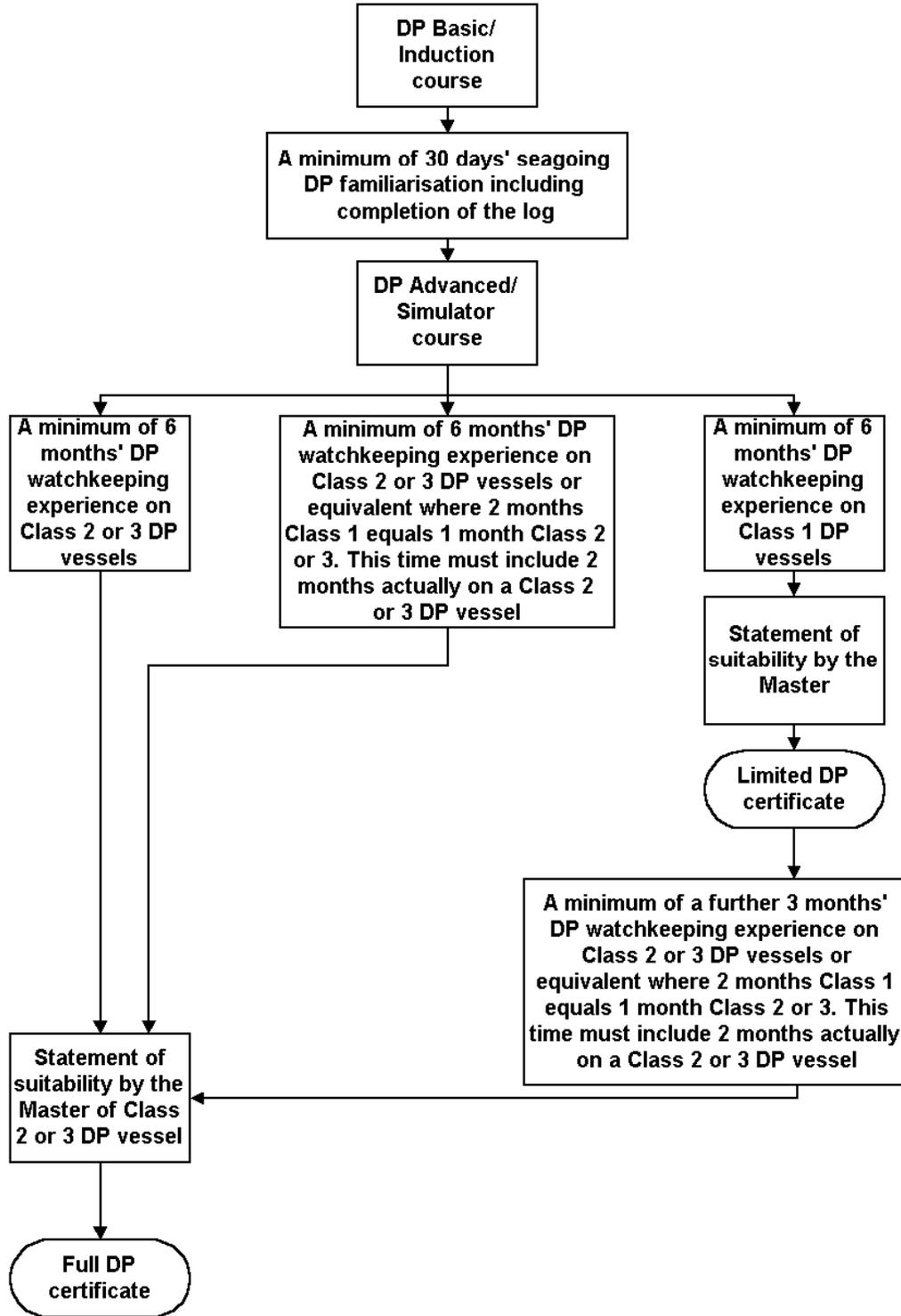
Simulator time	DP time exemption
37.5 hours (1week)	8 weeks of 6 months on Class 2 or 1
22.5 hours	5 weeks on Class 1 only
15 hours	3 weeks on Class 1 only

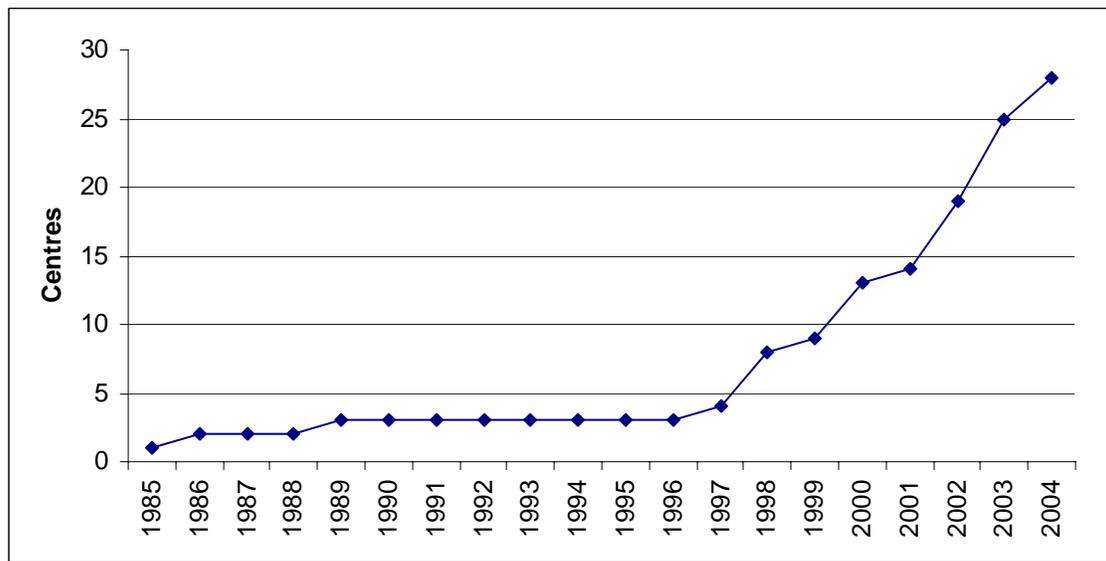
The conditions relating to the DP watchkeeping time exemption are: -

- Not more than half the DP time may be replaced by intensive simulator training.
- If more than one week of intensive simulator training is undertaken there must be at least four weeks between the simulator weeks.
- Intensive simulator training may not replace the 30 days seagoing DP familiarisation.
- Intensive simulator training may not replace the final weeks of the required DP time.
- Intensive simulator training may not count towards DP time for upgrading from a limited to full certificate.

The DP CAP™ programme currently focuses on DP knowledge, skills, contingencies and training opportunities on board shuttle tankers and uses a unique combination of simulation and real time DP practice. The programme itself utilises an onboard simulator that enables the DP system to be fully functional as if the shuttle tanker were in the vicinity of a loading station. However the operations are carried out at a greater distance from this station with the system adjusting the readings to give the appearance of being closer than in reality. In addition to the simulated exercises there are CBT exercises and a workbook for participants to complete. The programme encourages safety in offshore loading, theoretical and practical DP knowledge and experience and teamwork. It is anticipated that DP CAP™ will achieve wider application in the future.

DP CAP™ does not replace any of the elements of the Institute’s DP Operator’s training scheme, with the participant still having to complete the Basic course, 30 days DP familiarisation, the Advanced course, the equivalent of a minimum of six months’ DP watchkeeping experience and to have the suitability as a DP watchkeeper assessed and confirmed by the Master.



APPROVED DP OPERATOR TRAINING CENTRES

In introducing the certificate the regime for accrediting DP training centres was also introduced. This was initially outlined in the monograph and further expanded upon in the Institute's Guidelines on Accreditation and Validation. For a new centre this involves formally writing to the Institute at least six weeks before the proposed approval visit date, forwarding the course documentation for consideration and undergoing the approval visit itself. It is also suggested that prospective centres contact the Institute at the very early stages of development so that potential difficulties can be avoided. The process is designed to be supportive with centres being helped and guided along the way. These guidelines are currently under review and, in addition to any other changes deemed necessary, sections on the duties and conduct of accreditation team members and the circumstances in which accreditation may be cancelled or withdrawn will be added.

If a centre intends to deliver intensive simulator training in dynamic positioning there are further conditions relating to the simulation. The simulator including the DP system must be redundant and connected to DP related equipment. The simulation must include typical DP vessel operations, several scenarios and evaluation of the actions. When preparing these courses the centres should give consideration to level of simulation, actual time spent on the simulator, range and variety of scenarios, pre- and post-exercise briefing, emphasis on non-routine exercises and integration of other elements. Finally the simulator should meet the standards set out in Section A-1/12 of the STCW Code.

During the re-accreditation visit not only are all the areas that were considered during previous approval visits re-considered but also the team expects to see evidence of continual improvement.

DP INSTRUCTORS' MEETING

In the early days, with few centres, the approval visit to a centre was also used to convene the DP committee. However with the significant growth in the number of centres the approval visits and training centre meetings were separated in 1998. Thereafter an annual DP instructors' meeting has been held. In addition to representatives of the training centres representatives have also attended this meeting from IMCA, NMD and HSE in the UK.

The remit of this group has been: -

1. To facilitate exchange of information and views in the membership
2. To discuss matters of mutual concern including: -
 - a. Accreditation of DP training centres
 - b. Course content, structure and delivery
 - c. Certification structure and process
 - d. Developments in DP technology
 - e. Developments in DP simulation
 - f. Developments in training technologies and methodologies
3. To consider and make recommendations to the secretariat for changes to the scheme
4. To discuss and consider other items which may be added if and when considered appropriate
5. To meet on an annual basis

Over the years the annual DP instructors' meeting has addressed a number of issues. This has generally been done by, after appropriate consultation, the secretariat preparing a paper on a topic for consideration by the group. The topics considered have included: -

- Teaching qualifications for DP instructors
- Induction/Basic and Simulator/Advanced course duration
- Detailed aims and objectives for these courses
- Criteria for exemption from the Induction/Basic course
- Validity period for the Induction/Basic course
- Reduction in required DP watchkeeping time through intensive simulator training

DYNAMIC POSITIONING TRAINING ADVISORY GROUP

Recently it has been recognised that there may be a need for greater interaction between various interested parties in the area of DP Operator training. Although at an early stage there is a proposal to establish a Dynamic Positioning Training Advisory Group (DPTAG). Initial thoughts on the role of the group are that it would be to monitor and review the scheme and make recommendations. The group's remit would not include involvement in accreditation or in commercial considerations such as the number of training centres.

If established it is anticipated that the composition of the group could be as follows: -

- The Nautical Institute
- Norwegian Maritime Directorate
- Training provider
- Regulator (e.g. HSE)
- Trade Association (e.g. IMCA)
- Serving certificated DPO (if practicable)

Supporting the group would be a correspondence group whose membership could include training centres, trade associations, regulators, vessel owners and operators, DP operators and other interested parties. This development is at a very early stage and a paper on it will be presented to the Institute's Education and Training Committee for consideration later this year.

DPO CERTIFICATE DATABASE

In 2000 it was realised that the demand for DPO certificates was outgrowing the manual paper-based system of processing and recording the Institute had operated. An electronic database both to simplify the processing and to record the information in an easily retrievable format has now been developed and fully implemented.

All the information that is contained within the Dynamic Positioning Operator's Logbook is entered in the database. This includes amongst others: -

- Induction/basic and simulator/advanced courses attended
- Seagoing DP familiarisation
- DP watchkeeping experience
- Statement of suitability as a DPO
- Award of a certificate

The database makes it easier to calculate the amount of DP time in each DP class a person has and to carry out various checks during the processing. These checks include, for example, verifying that the Master, the vessel and the date in Section F matches an appropriate entry in Section E: DP watchkeeping experience. The database itself assigns a consecutive certificate number and prints both the certificate and the accompanying letter. Also should the certificate have to be re-printed for any reason this is automatically logged in the database.

Further improvements have included a system for upgrading so that both limited and subsequent unlimited details are easily recorded with the original certificate number being retained and the batching of records so that in the event of failure during a print run this can easily be repeated.

Not only has the database been used to improve logbook and certificate processing but also to verify certificates held and to remove a fraudulently obtained certificate. In a recent case, through co-operation between the maritime authority in the UK and ourselves, we were able to confirm that at the time when this person submitted the logbook for certification the certificate of competency detailed in the front of the Dynamic Positioning Operator's training logbook was not held. Thus we were able to declare that there was a fraudulent entry in the logbook, cancel the DP certificate and notify various relevant organisations.

The IMO estimates that 10% of all certification may be fraudulent. Thus far there have been a very small number of incidents of fraudulent DP course certificates and DP Operator certificates. However there are probably fraudulent DP Operator certificates and certificates gained on fraudulent documentation in existence. To combat any attempts to obtain a certificate fraudulently the Institute has taken the following steps: -

- Charge GBP30 currently for processing certificates not accompanied by a logbook
- Not accept any photocopies
- Require centres to submit lists of students attending during the year
- Investigate all deviations from the norm in logbooks

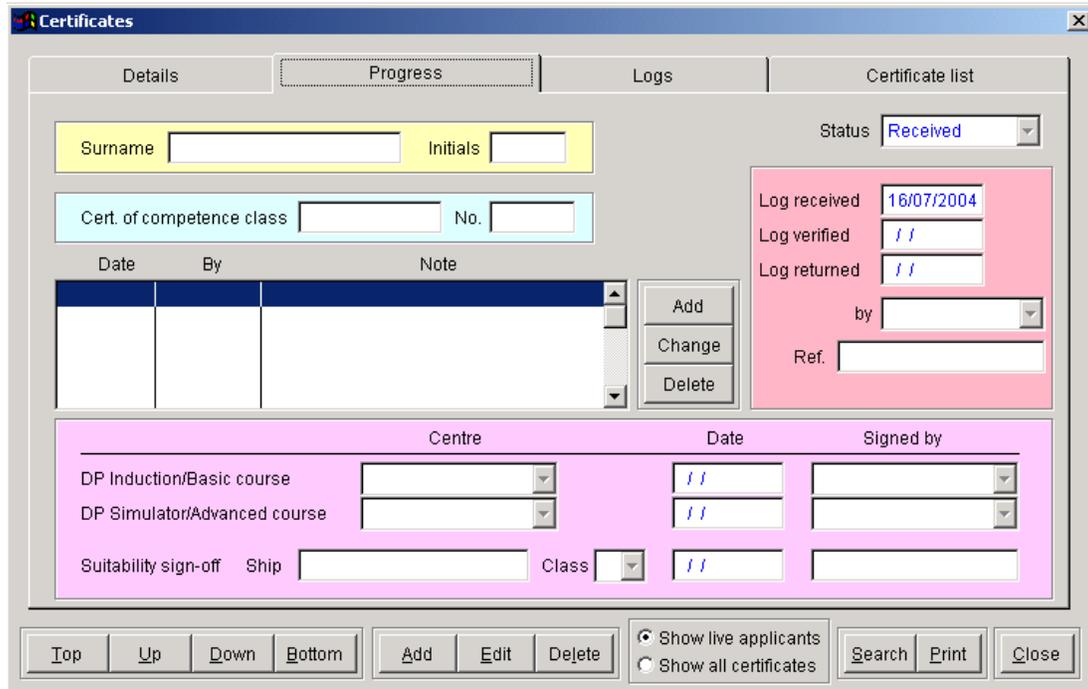


Figure 2: Progress screen for DP Operator certification

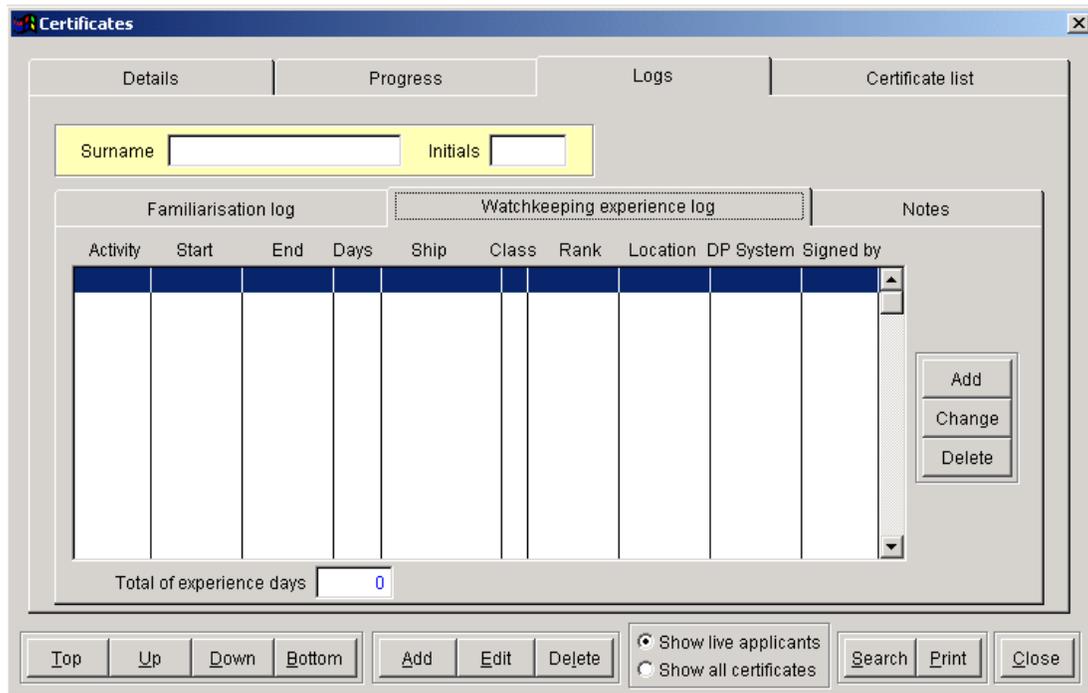
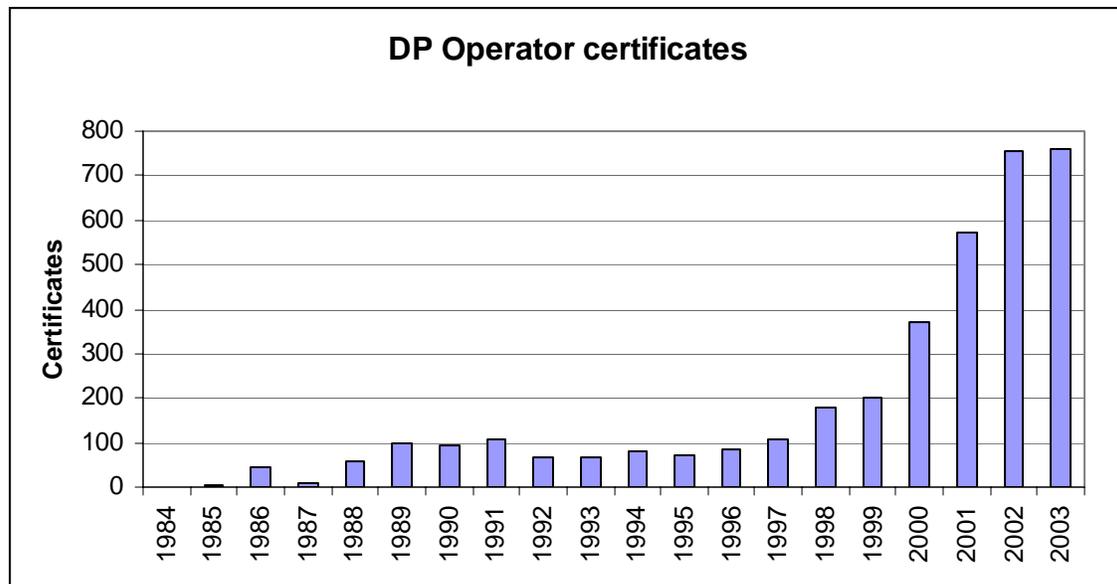


Figure 3: DP watchkeeping experience log screen

Since the start of the scheme in 1984 the Institute has issued in excess of 4000 certificates, all of which are now on the database. Over the past few years the growth has steadied to about 750 certificates a year.



DP VESSEL DATABASE

For a number of years, with the continued growth in the number of DP vessels, finding and retaining accurate details on these vessels had proved to be time consuming and sometimes not possible. Thus, in 2002, it was decided to commission our own database onto which the details of as many DP capable vessels as possible would be added.

Being able to verify the actual class or probable class of DP vessels is a necessity when deciding whether an applicant should have a limited or unlimited DPO certificate, or indeed even if they should have a certificate at all. Populating this database has proved to be time consuming but we are reaching a point where it will be trialed before being put into full use as our primary source of information on DP vessels cited in logbooks.

The information includes the name of the vessel, its former names, vessel type, current DP system and DP classification among others. The source of this information is usually vessel specifications if available. It should be noted that this is an ever-expanding area. For example whereas at the start of the scheme the applicant had only served with GEC, Kongsberg or Honeywell the list of DP manufacturers seen or likely to be seen in a logbook is now extensive. These include Alstom, Kongsberg, Nautronix, Autonav, ABB, Beier, EMI, Hollming, EMRI, Imtech, Kawasaki, Mitsui, Rolls Royce and Sirehna. The same applies to vessel type with diving and drilling be the main applications for DP at the start. Now this list also includes accommodation, anchor handling, supply, crane and heavy lift, cable lay and repair, pipelay, dredging, shuttle tankers, well stimulation and survey.

It is anticipated that when the database is fully operational it will reduce the need to contact vessel operators, manufacturers and training centres, as well as search the internet, about the DP class.

Figure 3: Individual vessel page on DP vessel database

The following chart shows the equivalence for DP classification between the IMO, as set out in MSC/Circ.645, and various classification societies. These are Det Norske Veritas (DNV), Lloyds, American Bureau of Shipping (ABS), Bureau Veritas (BV), Germanischer Lloyd (GL) and Registro Italiano Navale (RINA). It also includes the equivalence to the Norwegian Maritime Directorate (NMD) classification.

IMO	NMD	DNV	Lloyds	ABS	BV	GL	RINA
	NMD CLASS 0		DP (CM)	DPS-0	DYNAPOS SAM		DYNAPOS SAM
		DYNPOS AUTS					
CLASS 1	NMD CLASS 1	DYNPOS AUT	DP (AM)	DPS-1	DYNAPOS AM/AT	DP 1	DYNAPOS AM/AT
CLASS 2	NMD CLASS 2	DYNPOS AUTR	DP (AA)	DPS-2	DYNAPOS AM/AT R	DP 2	DYNAPOS AM/AT R
CLASS 3	NMD CLASS 3	DYNPOS AUTRO	DP (AAA)	DPS-3	DYNAPOS AM/AT RS	DP 3	DYNAPOS AM/AT RS

CONCLUSIONS

Firstly here are some thoughts from the DP training centres. The section on position measuring equipment or reference systems is intended only to give an overview of most common references, detailing in outline their principles, operations, advantages and limitations. For more detailed knowledge of these systems DPOs should attend the general position reference courses or the specific equipment courses offered by some centres. An example of a timetable for a PME/PRS course is shown below.

Day 1	Introduction
	Satellite-based systems
	Practical exercises
Day 2	Differential systems
	Practical exercises
Day 3	Hydroacoustic systems
	Practical exercises
Day 4	Short range systems
	Practical exercises
	Weightings, pooling, alarms
	Conclusion

The simulation should be as realistic as possible and to achieve this many centres have enhanced their provision. These enhancements include the installation of an electronic chart/survey display, installation of a simple visual display system and incorporation of the DP within a full mission simulator. However the latter does not come without significant disadvantages. Some of these are high capital cost, limitations on access to full mission simulator and participants having to focus on every element of bridge operations rather than just DP.

The completion of neither the Basic/Induction course nor the Advanced/Simulator course will produce a DPO. The scheme needs to be followed, the familiarisation tasks completed and the DP practice undertaken. The scheme, as has been said is a partnership and a DPO becomes such upon satisfactory completion of the whole scheme.

The value of accreditation should be seen as a shared partnership between the training centre and the Institute based upon agreed standards and specified trainee knowledge and performance. Together we have attempted to keep the DPO training scheme appropriate within the framework originally devised. We believe that the changes have improved the scheme and will continue to work for improvement of the scheme as well as continue to seek evidence of improvements at the training centres during our visits.

REFERENCES

Bray D. (1999), Dynamic Positioning Operator Training, The Nautical Institute

Middleton R. B. (1983), Dynamic Positioning Operator Training and Qualification Recommendations to the UK Department of Transport (published in Seaways), The Nautical Institute