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TRAINING SESSION

Effective Training of DP Operators

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In the UK, training for DPOs became established in the late 1980s. Whilst not then (and still not) mandatory, it was regarded as important for those in charge of a DP vessel to hold appropriate qualifications. This was often stipulated by the client.

What was appreciated was that a level of competence is required by the DPO and other "key" personnel. This competence is contributed to by three factors, and witnessed by a fourth. Competence is contributed to by Background, Experience and Training, and competence is evidenced by Qualifications. Other key personnel engaged in DP operations include the Master of the vessel, her Chief and watchkeeping engineers, and the ERO or ETO; the person responsible for the continued running of the system technically.

During the late 1970s and early 1980s, there were experienced a number of accidents and incidents relating to DP-capable vessels. Some of these events resulted in fatalities, mainly to divers. DP techniques were being rapidly applied to Dive Support vessels, as well as many other vessel types engaged in the North Sea oil and gas service industries. At that time, the industry was still developing safety standards, and was on a steep learning curve. DP was just one example of new technology being introduced very rapidly in order to expedite the exploitation of offshore reserves.

At this time, there was little in the way of risk assessment or hazard identification being applied to offshore operations. Contingency planning was rudimentary, and vessel/company/client operating instructions often were inadequate. Further to this, some of the risks were simply not appreciated. The hazards of operating DP vessels in shallow water were often not addressed, it simply being assumed that if the vessel was capable of completing the task in the deep-water exposed-location Northern North sea locations, then the relative benign conditions obtaining in the Southern sector would pose no problems. Likewise, the risks of operating divers from DP vessels, which are dependent upon continually rotating propellers and thrusters, were sometimes not fully appreciated.

All of these topics were addressed in the training programmes initiated during the 1980s by a number of training providers, including my own centre. DPO training is administered by the Nautical Institute in the UK. The Nautical Institute is a professional body for senior seafarers, mostly Master mariners. Their DP Validating committee are responsible for the inspection of individual training centres, their staffing and their programmes. The Nautical Institute also defines a recommended training programme leading to a recognised qualification. This qualification is the only one of its type available anywhere, and in general is accepted worldwide as an indication of competence. Although the Nautical Institute is a UK-based organisation, it is very international in nature. Certificates are issued against successful completion of a four-phase training and assessment programme, with evidence contained within the candidates personal DP Logbook.

All of the above is well and good, and none of this is news. A question may well be posed in regard to how effective is the training programme, and how "competent" are the DPOs holding DP certificates obtained through this programme.

The above is, of course, a very difficult question to answer. DP incidents are few and far between (thankfully) and it may happen that a very long-serving DPO has not experienced a major incident. We are in a similar area to that of training flight-deck officers in airliners. Simulation is the obvious way forward, with all the advantages of being able to provide incidents on demand, in a controlled and totally safe environment. Ability to monitor teamwork, planning, hazard

identification, reactions to routine and unplanned events, and discuss the scenario after completion all lead to effective training.

That, of course, is very easy for me to say, but where is the evidence?

Statistics relating to numbers, types and frequencies of incidents related to DP facilities have been collected and collated for many years by the IMCA (previously the DPVOA). All of this data is published and is available for inspection [1]. The shipowner membership of the IMCA Marine division is encouraged to submit details of any and every incident occurring to any of their vessels. This information is treated confidentially and forms part of the annual incident reports and statistics issued by the IMCA. Incidents are classified into a number of different causes, e.g. Operator Error, Computers, Peripheral systems, Electrical/Power. Typically, any incident will have a Primary cause and a Secondary cause. Incidents are also classified into categories; Loss of position 1, Loss of position 2 and Lost time incident, in descending order of seriousness.

While it is easy to misinterpret data from this type of exercise, some trends may provide useful information. Some of the figures are detailed below:

Between 1980 and 1984, 49% of incidents where the Primary cause was Operator Error.

Overall, prior to 1988, 40% of incidents were put down to Operator Error.

Between 1989 and 1994, this figure had dropped to 33%

In 1998, the figure appeared to be around the 20% mark. This breaks down to the following:

LOP 1 – 17%	(percentage of incidents attributable to Operator Error)
LOP 2 – 23%	(" " " " " " ")
LTI - 6%	(" " " " " " ")

It can be seen that, during the period that DP operator training was becoming established, the number of incidents of all types, attributable to Operator error dropped from about 50% to about 20%.

The above statistics are open to all sorts of interpretation. There may be many reasons for this drop in percentage, not related to quality of training. Over time, procedures may have been improved, personnel may have become more aware of hazards and risks. Even the reporting system may mitigate against accurate data being collated; there is always an element of sanitisation of the reporting of personnel roles in any incident, and bending of the truth for the purpose of expediency. Further, we are in the area of making assumptions based upon a small sample of incidents.

Nevertheless, I would like to think that ONE factor in the statistical reduction in the proportion of incidents attributable to Operator error, is the improved standards of competency resulting from systematic operator training.

DEVELOPMENTS IN TRAINING PROVISION

At Lowestoft, we have been in the business of training DPOs for over 13 years. Commencing in 1986, our original system was a Kongsberg Albatross ADP 503; state of the art at that time, but

very antiquated nowadays. In common with all UK training facilities, we are permanently short of cash, and it is always an uphill struggle to obtain funding for hardware improvements. Nevertheless, we managed to keep reasonably up to date over the years. Several major improvements have been implemented over the past two years, however. These changes have resulted in massive improvements in the quality and effectiveness of the training provided.

We have had a long and fruitful association with Kongsberg Simrad over the years. KS run their own training centres both in Kongsberg and here in Houston. In 1998 it was agreed that Lowestoft College and Kongsberg Simrad, together with the Maersk training centre in Svendborg, Denmark, form a training partnership in order to pool resources and expertise. This partnership began early this year, and will ultimately result in exactly the same "product" being delivered at all three centres. This "product" will be continually developed by the three partners within the scheme.

Within this partnership, improvements have been made to the provision of equipment for the purposes of DPO training. One major drawback in a traditional course, especially at the Basic operator level, is the business of demonstration of the functions and facilities of the system. With only one DP system available, the learning process is less than perfect. Six or eight students clustered around one system did not make for efficient training. The amount of time available for each student to practice the procedures was of necessity, limited. With this problem in mind, Kongsberg Simrad has developed a PC-based desktop DP trainer. This is a real system running on a PC connected to a real SDP11 panel. This unit is small enough to locate at an individual student's desk. Typically a classroom is fitted with eight of these units, with a further system on the Instructor's PC. This last unit is connected to a multimedia projector allowing demonstration of all facilities. The Instructor can switch between the DP programme, and Powerpoint for the conduct of the courses. This combined setup has proved to be a very powerful training tool.

For the advanced courses conducted on a simulator, a different approach is required. Here, it is necessary to conduct realistic bridge scenarios using a real, fully redundant, DP system placed in a pilothouse environment. The limitation here has always been one of simulator facilities. With the older ADP 500 and 700 series equipment, only a very poor level of simulation has been available. The Instructor was always very aware of the range of failures, system errors, etc., that he could NOT simulate! The DP system manufacturers were loth to improve the level of simulation because of the extensive development costs of effective simulation when set against the limited prospects of system sales to training providers.

This problem was addressed in 1996 by Kongsberg Simrad, when it was decided to develop an effective simulation for its new range of equipment, the SDP, due on the market the following year. I became involved in this project on a consultancy basis. We at Lowestoft were to be one of the first customers for the new system, and we were to be the trial "guinea pig" for the new simulator.

Cutting a very long story very short, this simulator is now complete, after a lot of midnight oil burning, meetings in Kongsberg, "discussions" about what could be done and what couldn't, endless testing of prototype software on the Lowestoft system. We now have a very powerful simulation facility, specifically designed for the training of DPOs at the advanced level.

Both of the above-mentioned simulation facilities are based upon three vessels; a multi-role monohull offshore support vessel, called "Challenger", a semisubmersible multi-purpose vessel called "Alpha Semi", and a tanker called "Britannia". These three vessels can be configured to

conduct any and every type of DP-supported operation. Scenarios have been designed to allow for the conduct of all types of operation.

NEW DEVELOPMENT

The above facilities are specifically designed for the running of training within the Nautical Institute scheme. However, there remains a gap within the training provision. This shortcoming represents the full-mission DP simulator. The requirement is to have a full integration of DP simulation into a ships bridge simulator. This type of facility is available at only a small number of centres worldwide, with only limited ability to simulate the DP aspects of the scenarios.

Norcontrol have delivered many ships-bridge simulation systems worldwide for many years. Lowestoft College recently installed a three own-ship POLARIS system of Norcontrol supply. A project is underway to develop this into a fully-integrated DP vessel bridge, based upon the vessels described above. This should combine the abilities of the Polaris simulation with the SDP simulator. Lowestoft College staff are acting as advisers to this combined Kongsberg Norcontrol and Kongsberg Simrad project, and it is intended that the Lowestoft system be used as a test-bed for this development.

The above is an exciting project, able on completion to fully extend training provision in the DP area. We look forward to its completion.

REFERENCES

[1]IMCA publications:

1. IMCA Station Keeping Incidents reported for 1997. M.147, November 1998 (DPSI8)
2. IMCA Station Keeping Incidents reported for 1996. M.144, December 1997 (DPSI7)
3. IMCA Station Keeping Incidents reported for 1995.
4. DPVOA Dynamic Positioning Systems' Incidents, incorporating DPSI 1-5 and the DoE Diving Inspectorate