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Has COVID-19 changed DP assurance forever?

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Abstract

As we're approaching the end of travel restrictions and physical distancing is no longer a requirement, it is a good time to reflect on the changes that have occurred in the DP assurance, and if, as an industry, we are rebounding stronger and more resilient, or weaker in our ability to support the DP community.

In response to the pandemic, Governments and Operators implemented international and local restrictions to reduce the spread of COVID-19, which has caused disruptions affecting daily operations of Dynamically positioned (DP) vessels and other offshore assets. The restrictions significantly impaired the ability of vessel operators to accomplish a robust DP assurance process.

Travel restrictions have promoted "local support" in locations lacking specific DP competences, and at the same time 'Remote Trials' solution have become more and more popular.

Besides giving an overview of the transformations that COVID-19 has brought to the DP assurance process and methodology, the paper will aim to address the following questions:

- Is the DP assurance weaker after COVID-19?
- Have Remote Assurance now become the norm?
- How will DP assurance will look in five years from now?

This paper will give as well an overview of different projects conducted during the pandemic, consisting of Remotely Witnessed DP trials, as per definition outlined in the 2020 OCIMF document *DP FMEA Assurance Framework Risk Based Guidelines*.

Abbreviations

CMID: Common Marine Inspection Document

DP: Dynamic Positioning

FMEA: Failure Mode and Effects Analysis

IMCA: International Maritime Contractors Association

OCIMF: Oil Companies International Marine Forum

OVID: Offshore Vessel Inspection Database

VMS: Vessel Management System

VTO: Vessel Technical Operator

WTIV: Wind Turbines Installation Vessel

Introduction

In the beginning of 2020, we all witnessed unprecedented events caused by the COVID-19 global pandemic: governments around the world, in an attempt to cope with the spread of the contagion and minimize the fatalities caused by the virus, have found themselves in a position to implement drastic restrictive measures overnight: lock downs and travel restrictions were applied in a mostly unconditional way, to more than 3.9 billion people in more than 90 countries.

These measures had severe repercussions on global businesses, such as the Offshore Energy Industry, that rely on a globalized supply chain for sourcing of technology and services.

The DP assurance process, intended as a support service to the various offshore energy industry sectors, has likewise suffered a drastic disruption and a subsequent abrupt adaptation to new business conditions, with effects that still persist today.

Before presenting the disruption factors introduced by the COVID-19 pandemic to the DP assurance process, it is necessary to give an overview of how industry associations and charterers / end users of DP vessels have reacted.

In April 2020, IMCA released an information note [2] indicating that “[...] Should any vessel operators have concerns regarding continued safe operation of the DP system as a result of being unable to undertake formal annual DP trials, IMCA recommends the continuation of documented field arrival trials and DP exercises and drills. The selective use of parts of the DP annual trials programmes by vessel crew may also build further confidence that the performance, protection and detection attributes of the DP System remain intact until such time as normal trials can be undertaken in accordance with Guidance for developing and conducting DP annual trials programmes”

At the same time, some of the charters and some of the well-known third parties DP service providers, promulgated guidelines to shipowners and VTOs on how to conduct interim annual DP trials.

These guidelines, mostly similar one to each other, required the crew to conduct an extract of the vessel DP trials’ programs, mainly comprising performances of controllers and main machinery, and verification of main redundancy. Test results performed onboard needed to be supported by data centric evidence collected by the crew. [3]

These interim solutions were mostly accepted and applied in the first phase of the pandemic. With the protraction of the pandemic, and the softening of the travel restrictions, some of the charterers started to gradually abandon these interim solutions, to require a more robust and traditional DP assurance.

Let’s present now the two main disruption factors introduced by the COVID-19.

The first factor of disruption for DP assurance was obviously travel restrictions. Travel restrictions have been imposed with different levels of severity for more than two years, and applied not only between different countries, but often between different regions of the same country.

Because of this, the DP assurance providers, during these two years, found themselves in a position of not being able to mobilize DP practitioners with the required competences to perform the trials, or to be able to mobilize them, but only with additional burden related to medical expenses, paperwork and days of quarantine. In other words, this was translated in a decreasing of efficiency, combined with an increasing of costs for the service.

The second factor of disruption was represented by the sudden jamming of the global supply chain: it is easy to imagine how the impossibility of promptly having an adequate number of equipment and spare parts, made its weight felt even more for systems that must be completely redundant, such as those that are part of a DP system.

These considerations described above were obviously applicable to most businesses and services worldwide, and the global response was, wherever possible, to migrate towards “remote services” using web based digital tools.

Unfortunately, the DP assurance is a service that is usually carried out offshore, where the costs of a satellite internet connection can have a significant impact and the amount of data that can be transmitted is generally limited.

The research

To verify the impact of the COVID-19 pandemic on DP assurance and try to objectively quantify how the pandemic has changed the context of this service, Global Maritime has conducted, at a regional level, a small but significant research on available data.

Global Maritime, as a third-party service provider, has access to a quantity of DP trials reports that must be verified in different contexts, such as Marine Warranty or Marine Assurance.

The research has been carried out across three different offices of Global Maritime in South East Asia, located in Indonesia, Malaysia and Singapore. The scope of the research was to compare the documentation related to DP trials reviewed during the year from January 2019 to December 2019, therefore immediately preceding the pandemic, against those collected during the year from September 2021 to August 2022, in an increasingly normalized “post-pandemic” context.

The catalogued data refer to annual DP trials and FMEA proving trials reviewed during DP assurance inspections / verifications performed on behalf of the charterer, OVID inspections, CMID inspections and various types of suitability surveys.

The statistical sample analysed in the year that we will define as "pre- COVID ", consists of 52 DP vessels, while the one analysed in the year that we will define as "post- COVID", consists of 63 DP vessels.

Figure 1 shows the types of vessels analysed in the two statistical samples: for obvious reasons of confidentiality, this paper will not mention any vessel or DP assurance service provider name, nor vendor or manufacturer, but will only present anonymously the data collected.

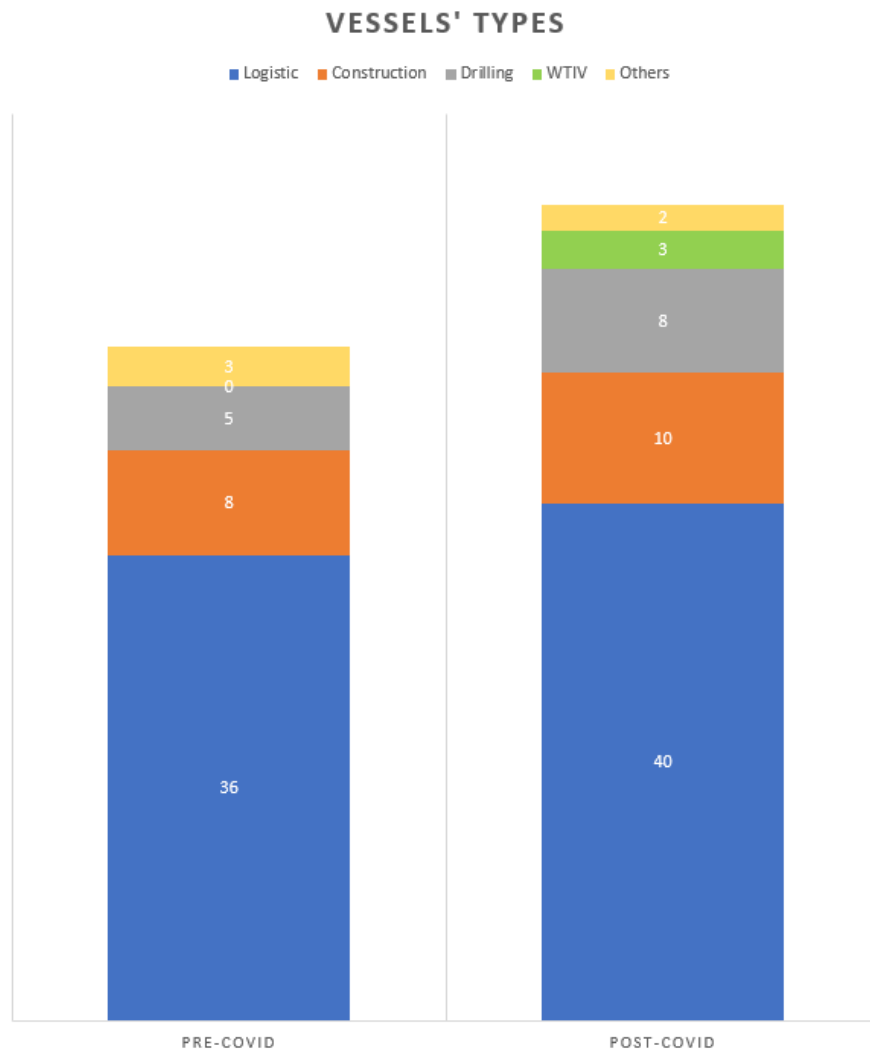


Figure 1 – Statistical sample

Remote DP trials

Already in the pre-pandemic period, the debate related to remote DP trials was particularly heated: the oil price crisis had put pressure on the P&L and balance sheets of most of the DP vessels' owners, and remote DP trials had appeared to some as a mean to render the DP assurance process more efficient, at least in a context of limiting the operating costs of the ship.

The lack of dedicated rules, industry guidelines or best practices that could at least give an industry shared and recognized definition of "remote trials", had led to the proliferation of various practices attributable to the name of "remote trials", especially in areas where the charterers did not place too much weight on the presence of an independent witness during the DP trials, as required by IMCA M190.

As it can be seen from the data collected, the pre- COVID sample already presented a significant percentage of trials unwitnessed by a DP practitioner; the pre-COVID sample also tells us that, for the DP vessel analysed, remote DP trials were performed on logistics types only.

The post- COVID sample has a 5-point higher percentage of unwitnessed DP trials. In the post- COVID sample, it is noted that remote DP trials are no longer a phenomenon that only concerns logistic vessels. In addition, it is highlighted that all the WTIVs present in the sample had based, in the previous year, their DP assurance on remote trials.

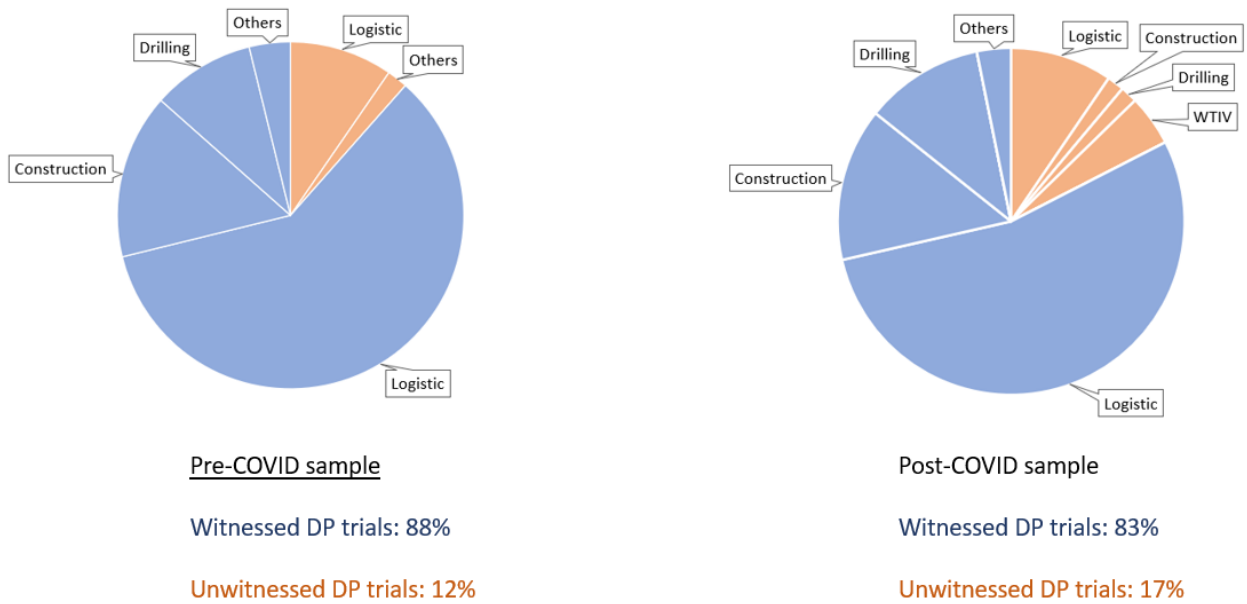


Figure 2 – Witnessed Vs. Unwitnessed Remote DP Trials

In April 2020, the new OCIMF publication, *DP FMEA Analysis Assurance Framework Risk-based Guidance*, finally gave two distinct definitions related to remote DP trials:

Remote testing: Testing performed by crew or other owner's representative without the presence of (or remote witnessing by) a surveyor. [...] End user/charterer's standards/policies may preclude acceptance of non-data centric results presented by remote testing as defined in this information paper.

Remote Witnessing: Testing performed while being remotely witnessed by a surveyor through a live video and sound feed.

None of the trial's reports analysed can be referred as *remote witnessing trials*, as per the definition given in the OCIMF guidelines.

In essence, what can be seen from the data, is that the travel restrictions imposed by governments to cope with the spread of the virus has encouraged DP assurance practices that were already becoming popular in the pre- COVID period, and that still seem today to enjoy a positive trend.

Local offer

Travel restrictions have not only encouraged remote testing practices. In contexts where travel bans were also applied to interregional transits within the same country, it has been noted that new realities, characterized by the most diverse levels of competence, have offered themselves as a support for local DP assurance.

The disruption of the supply chain has sometimes also introduced a transformation of the concept of DP assurance service, as it was offered by new local players.

Where vessel owners found it difficult to find damaged parts of DP systems and equipment, or to mobilize service engineers from other nations/regions in a timely manner with the ship's activities, local players offered to find (mostly from local scrap yards) the parts needed to restore the system, offering a package that would provide the needed component(s), with installation and commissioning services, together with the DP trials for the vessel.

As in the case of remote DP trials, these new practices have carved out a slice of the market that seems to persist even in a post-COVID context.

Below are the data collected from the sample examined; DP assurance providers have been divided into two categories: "Global or Well-Established Service Providers" and "Local or New Service Providers"

The criteria to define a "Global or Well Established Service Provider" has been based on two main characteristics:

- The DP assurance provider has a global reach with DP practitioners who are direct employees in branches located in at least three different continents.
- The DP assurance provider has a regional reach but they are supporting DP assurance in the region for more than 10 years, with DP practitioners who are direct employees and member of recognised industry committees.

All the others have been classified as “Local or New Service Providers”

The data analysed shows that, while during the pre- COVID year less than one third of the trials were provided by local (or not well established) companies, in the post-COVID year this data is raised to almost 40%.

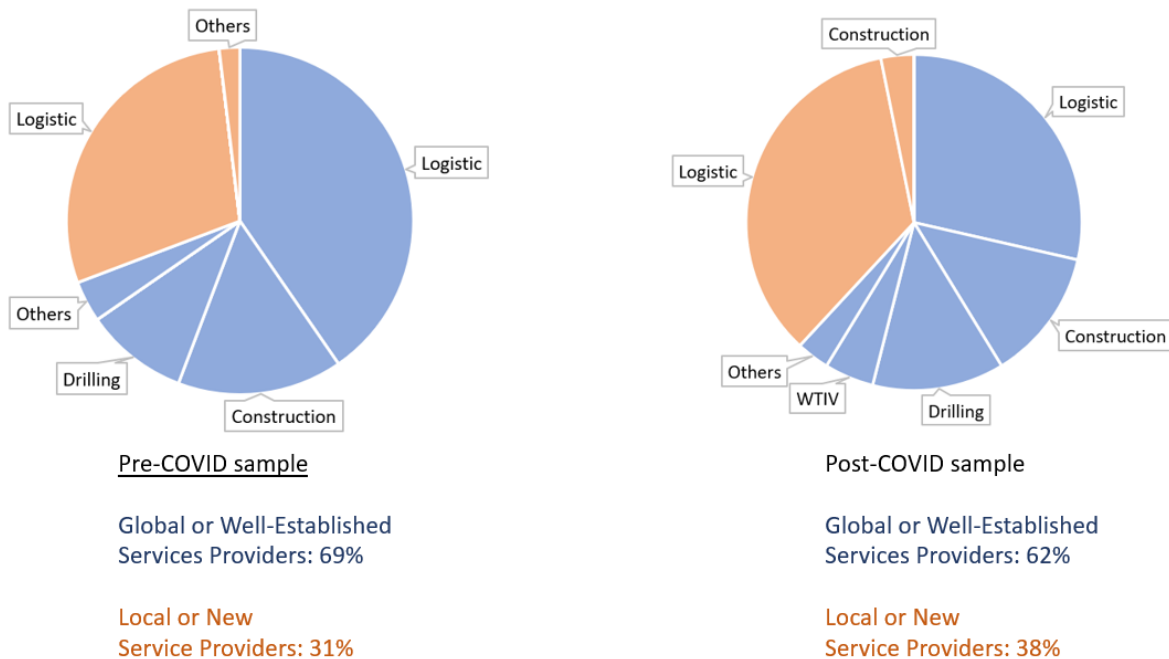


Figure 3 – Global Service Providers Vs. Local Service Providers

We would like here to emphasize that this is only a quantitative analysis which is not intended to provide any feedback on the quality of the data analysed: in other words, this paper do not want to imply in any way that the quality of the DP assurance provided by the companies defined as “Global or Well established” was better than the services provided by others.

Smart DP trials

As mentioned in the previous paragraph, none of the trial analysed were of the “remotely witnessed” type as defined in the OCIMF *DP FMEA Assurance Framework Risk-based Guidance*.

During the pandemic, Global Maritime has though provided this type of service in seven different occasions, where mobilization of DP practitioners was highly impractical, due to travel restrictions, or quarantine requirements.

This technique has been applied for annual DP trials to four PSVs, two construction vessels and one drillship.

Remotely witnessed DP trials represented, at that time, an opportunity to provide the VTO with witnessed trials, compliant with the indications given in IMCA M190, even during the COVID pandemic.

The methodology utilised consists in a relatively easy and non-invasive technical solution, based on the concept of mirroring the DP and VMS operator stations and streaming them in a dedicated machine, utilised to rise a web-based conference call between the vessel, the DP practitioner(s) and any other party involved in the trials.

Great care was taken in order to have a totally passive system, since any interaction with the existing controllers might have jeopardise the redundancy of the vessel; additionally, an active interaction with the controllers might have led to Cybersecurity implications.

The DP practitioners were able to see the operators' screens practically in real time (one second of delay was recorded). A Bluetooth audio device connected to the same machine was used to handle the communication with the DP operator, allowing a “hands free” communication while at the desk.

Except for the first (pilot) project, where the satellite internet service provider granted a two days of free data transmission, the trials have always been carried out in location with a good 4G coverage.

Conclusion

The data analysed in this paper provides two different pictures that can help to understand how the modalities of conducting DP assurance have been transformed by the COVID-19 pandemic.

If on the one hand COVID-19 has worked as an accelerator for the affirmation of trials performed remotely, on the other it has favoured the proliferation of new local realities, sometimes eager to offer a service that we could label as "variegated", and where the DP assurance no longer represents the core focus of the offer.

At this point it is necessary to ask ourselves if these new realities and these trends enhanced by the advent of the COVID-19 pandemic are beneficial to the safety of DP operations, to the safety of those who works offshore, and to the safeguard of environment and assets.

To try to answer this question, the IMCA statistics relating to the DP incidents reported in the last three years are shown below.

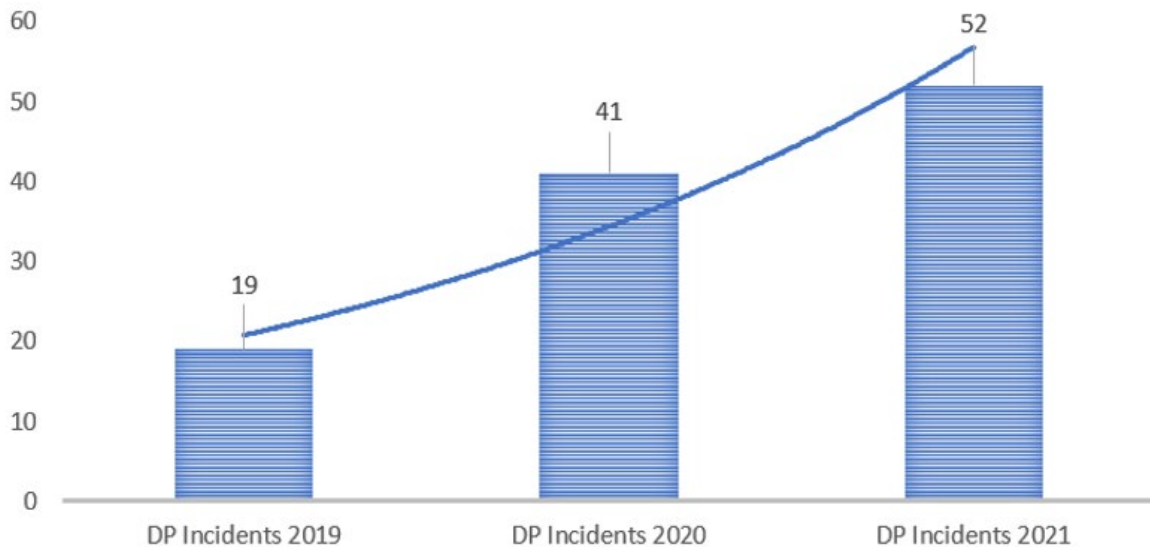


Figure 4 – DP Incidents Recorded by IMCA from 2019 to 2021

As can be seen from the graph above, the incidents reported in 2021 are almost triple of those reported in 2019.

To establish a relationship between the increase in the number of DP incidents and the recent evolution of how DP trials are conducted, a larger statistical sample and an in-depth and targeted study would probably be needed.

What remains certain, however, is that the COVID-19 pandemic has pushed through new methods of DP assurance that are neither standardized nor accepted unanimously by the industry. And this is happening in conjunction with a significant increase of DP incidents recorded in the last years, which bring us to conclude that the DP assurance came out somehow weaker from the COVID-19 pandemic.

Changes, however, represent not always adversities, but often opportunities. Even if the transformation in place seems today an irreversible process, how the DP assurance will look in five years from now, will largely depend on the choices that the DP community will take towards this transformation.

Acknowledgements

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References

- [1] OCIM DP FMEA Assurance Framework Risk Based Guidelines
- [2] IMCA information note ID 1498 (Published: 3 April 2020)
- [3] DNV Guidance for vessel owners, Annual dynamic positioning trials during COVID-19 (Published: 8 May 2020)
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