



Services

Maintaining your position

Dynamically positioned vessels are the cornerstone of the offshore and marine industries, from shuttle tankers to state of the art pipelay vessels and drill-ships. The importance of maintaining position and the reliance on these systems has become ever more critical.

At MAC, our team of multidisciplinary technical and operational experts provide services to help our clients to select, integrate, operate and verify these systems, according to their specific vessel application.

Whether identifying the safest operational mode or verifying the worst case failure mode through FME(C)A, or proving an installation through FMEA or annual DP trials, MAC aims to provide clients with effective solutions to enhance safe operability at all times.

MAC offers services which are independent of any regulatory authority, designer, installer or hardware provider, ensuring no conflicts of interest exist.

Through our experience with our DP FMECA work and extensive systems knowledge, we also provide analysis and solutions for our clients to allow them to operate their vessels in the most cost effective/commercially viable way. This can include analysis on potential upgrade or conversion work and mission equipment system interface/integration analysis.

Example DP/Electrical experience include:

- Failure modes and effects (and criticality) analysis (FMEA/ FMECA) – of DP systems, cranes, fire & gas and ESD systems, subsea tooling systems, flotel gangway systems, pipelay and cable lay systems, bilge and ballast systems
- Annual DP and DP FME(C)A trials and development
- DP equipment configuration analysis
- DP vessel conversion and upgrade studies
- DP operations manual development and review
- Developing SMO/CAMO/TAM's
- DP incident investigations
- Design reviews
- Tendering support
- Production of specifications
- FATs and CATs
- Electrical analysis.



A Bureau Veritas Group Company

Contact MAC for further details

Email: info@MAC-L.com
Telephone UK: +44 (0)1224 577070
Telephone US: 1 (920) 7508844
Website: www.MAC-L.com



DP Assurance Services FAQ

Q. Does MAC operate worldwide?

A. Yes. MAC has carried out many projects worldwide from our headquarters in Aberdeen and our Houston base. We ensure that we maintain a high quality and consistent approach to all of our projects from any of our operating bases.

Q. What type of vessels have MAC carried out DP assurance work on?

A. MAC has carried out work on an extensive range of vessels. From dynamically positioned flotels and state of the art pipelay and dive support vessels, to a fleet of state of the art drill-ships. For each vessel MAC adopts a tailored approach to ensure the work meets the requirements of the client, and fulfils the requirements of the applicable regulatory and industry bodies (for example IMCA and MTS) as well as classification societies.

Q. Why should I use MAC for DP assurance services?

A. MAC has a wealth of experience in the DP assurance field within its ranks of electrical, control and marine engineers, as well as master mariners. MAC offers services which are independent of any regulatory authority, designer, installer or hardware provider, ensuring no conflicts of interest exist. We believe our level of service is 'best in class' providing tailored high quality solutions to meet our client's requirements.

Q. What is a DP FMEA/FMECA?

A. A FMEA is a systematic method of studying failure. A vessel with a class notation of DP2 and DP3 must have redundancy in its design of the DP system. Therefore a DP FMEA is a systematic approach to proving, through analysis, the fault tolerance of the required redundancy of the DP system. A FMECA is when criticality is added to the process by rating each of the failures identified in the analysis, by severity of the effect and probability of occurrence, to arrive upon a criticality rating. It is a class requirement for a DP2 and DP3 vessel to have a DP FMEA.

Q. What is the difference between DP annual trials and DP proving trials?

A. There can be a misconception with some clients regarding the difference between these two trials programmes. The purpose of proving trials is to prove the failure analysis carried out in the production of the FMEA/FMECA. Normally, this is at the new build stage of a vessel and these tests form part of the customer acceptance sea trials programme for the vessel however these may also be carried out when a vessel has undergone a major conversion or upgrade resulting in the FMEA/FMECA being updated.

Annual trials are conducted for the life cycle of the vessel and generally within three months of the anniversary of the initial proving trials. The focus of this programme is to demonstrate the DP system remains fully functional and well maintained, and the redundancy concept also remains intact. At MAC our experienced DP team has developed many sets of both programmes. We also currently assist many of our clients in developing five-year rolling annual trials programmes in accordance with IMCA M190.

Q. What is an integrated approach to mission equipment FMEAs?

A. At MAC we have produced many FMEA and FMECAs for mission equipment for our clients. These include pipelay systems, heavy lift cranes, saturation and air dive systems, ballast and anti-heel systems, flotel gangway systems and launch and recovery systems. In analysing these systems we have taken an integrated approach where we consider the implications of the redundancy concepts and fail-safe designs of these systems against the vessel's DP redundancy concept. Examples of this would be looking at dive system or pipelay power distribution and taking DP configurations into account to ensure the redundancy concepts and fail-safe designs are in keeping with the DP worst case failure design intent. This approach has assisted our clients at design and build stages in vessels where these types of systems are included.

Q. What other services does the DP team provide?

A. As well as mission equipment FMEA/FMECAs our team of electrical, control, marine engineers and naval architects has been involved in many other services that our clients have requested. These have included equipment failure investigations, system integration studies, electrical load balance analysis, harmonic studies (THD analysis), voltage dip ride through capability studies, protection systems co-ordination and selectivity analysis, vessel conversion/upgrade project management, CMIDs/OVIDs, station keeping philosophy reviews.

MAC has a wealth of experience in the DP assurance field within its ranks of electrical, control, marine engineers and master mariners.



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