



**DYNAMIC POSITIONING CONFERENCE**  
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**BASICS OF DP**

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How We Chose A DP Class

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## **How we chose a DP Class -and- How we OUGHT to choose a DP Class**

Of the three classes for DP Systems, only two are viable for a drilling vessel, DPS 2 and DPS 3. Global Marine has to date been able to use a very simple process for determining which class to implement on a given vessel.

For conversions, the design of the original vessel pretty much dictated the choice. For example, when we converted the Glomar Celtic Sea from an accommodation to a drilling vessel, we had a DPS3 platform to begin with so the choice to maintain class through construction was obvious and brought with it no significant additional costs. The Glomar Explorer, on the other hand, was originally built with a redundant DP system in a generation where there was no thought of DPS3. To obtain DPS 3 classification we would have had to address major difficulties in compartmentation, cabling, piping and tankage. Therefore, because of compartmentation and other existing systems issues conversion to DPS3 was simply not practically feasible within the boundaries of the project. What was done as an alternative, therefore, was to make some minor modifications to reduce our exposure to DPS 3 type events, and to certainly consider DPS 3 issues for new systems and equipment.

For the new build vessels Glomar CR Luigs and Glomar Irish Sea I, the class determination was even easier: We provided what our client wanted. Both of these vessels are ABS classed as DPS 3.

The question, therefore, remains unanswered: For my vessel, is there no better place to put available funds than into DPS 3 classification?

Before the question is answered, we need to be very clear about two things: First, DPS 3 classification does not, nor can anything else, make a catastrophic disconnect scenario impossible. It can only reduce the risk of such a happening. Second, there may be other things which can also reduce the risk of such an event.

I believe that before DPS 3 is chosen some value engineering needs to be applied. I routinely hear it said that DPS3 is selected because the cost of an unplanned or uncontrolled disconnect can be astronomical. Well, that is of course true, but this type of motherhood statement tends to eliminate a proper evaluation of the issues.

I suggest that DPS 3 be elected only after a careful cost/benefit analysis, which considers the impact of DPS 3 upon day to day operations, and upon less major emergency operations. I believe that such an analysis should consider the additional maintenance burden of DPS 3 class, the possibly higher staffing costs, and the higher warehousing costs. It should certainly consider any additional fuel costs that might come from operating in a DPS 3 mode, be those costs direct or indirect.

I would also propose that a valid assessment of comparative risks be part of the decision, one considering the relative probabilities of various events and the cost of mitigating each of those events. I suspect one may find that, for the cost of DPS 3, any number of much higher probability events could be addressed. That would mean you could get more overall security with fewer dollars.

As an example, for a small part of the money put into DPS3 I could provide a really bulletproof position reference package where acoustic dropouts, DGPS dropouts, false returns, etc., would no longer be a problem. Which is more probable: Catastrophic loss of your entire power plant or having to disconnect because your position reference systems go awry. My suspicion is that this is an area much more likely to cause a serious incident than loss of a compartment.

Another possible area for a better return on investment is Software Reliability. It's an issue that is almost totally ignored. We put together a triple redundant system, but the software is identical in every machine. And probably you have a software package which is, at least in parts, a Beta test version at best. That means that we have, in the best systems, a plethora of single point failure locations. I would suggest that software reliability and software fault tolerance are largely ignored issues, even though software is perhaps more likely to cause a serious incident than hardware, and certainly more than loss of a compartment.

I would also suggest that for the cost of DPS 3 you could put a really fine trainer on every vessel, and put a really quality training program in place. We all know that the operator is the most important part of any DP system, and that he can save your bacon or he can kill you on any given day. Is loss of your main electrical compartment more likely than an untrained and inexperienced operator's hitting the wrong button? I wonder if we ought to put money in DPS 3 before we are sure we have done the best we can to provide, train and keep quality DP personnel.

Now these three areas are right off the top. And any one of these three areas can easily cause an incident just as bad as what DPS3 is intended to prevent. The cost for addressing these ought to be compared to the cost of DPS3 before what classification you will implement is determined. I haven't even addressed the drill floor, or the subsea arena, where I believe we may have even better opportunities.

Finally, I would suggest that before you decide on DPS 3, you purpose to do a really good, and in depth, FMEA. I have come to believe that you will get a lot better return on investment with a broad, and deep, FMEA than you get with DPS 3. Without it, even WITH DPS 3 you could find out you really aren't protected at all. That makes a DPS 3 nothing but a whitewash. And frankly, some of the studies I have seen aren't worth the paper they are printed on.

I would close with this statement: Before committing to the expense of DPS3, be sure that there is no better place to put that money.