

ACMA Providing Engineering Assistance on New Polar Expedition Vessel



As you may have read recently, ACMA has been asked by Quark Expeditions and our friends at 3D Marine to provide engineering assistance for a 200-passenger new build currently underway at Brodosplit Shipyard Ltd. in Split, Croatia.

Surprising as it may seem, there are a lot of similarities between the offshore industry and the cruise line business. Both have 24 x 7 operations that require marine staff, hotel staff and catering, and both must be prepared for harsh environments and remote locations.

Scott McClure, President of ACMA, sums it up like this, “We are working closely with 3D Marine Project Manager Elliot Tulloch in providing engineering reviews that include structural, marine systems, passenger comfort and activity coordination, ergonomics and work flow considerations, equipment purchase order reviews, as well as assistance in any other areas where we can provide a benefit.”

Once built and in service, the vessel will give passengers access to the remote regions of the Antarctic and Arctic regions. This means the marine asset integrity that ensures passengers, crew and staff will have a safe and entertaining experience is of the utmost importance.

The team is comprised of project lead 3D Marine and naval architect of record LMG Marine, with Cubik3 interior architects and ACMA responsible for general engineering over-sight. And, with the project just getting underway, it’s very clear that Captain Tulloch recognizes all the benefits that come from a “team” approach to project management. Scott reinforces that management style by noting, “ACMA has always worked with the belief that a team approach is the most successful way to make sure that the client’s needs are fully addressed and the final product meets the requirements at a cost effective price.”



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From the Top

I've long said, "Good engineering is a good investment." That's especially true when you consider the cost of lost time and revenue when you have to take an asset out of service to correct a problem.

As reported in this issue of McNotes, we've recently been asked to provide engineering services on a broad range of applications. I believe our ability to take on any number of diverse assignments comes from 43 years of consistently applying "good engineering" to each and every project we undertake. I also believe our commitment to "good engineering" is one of the primary reasons we've survived this and many other industry slowdowns over the years.

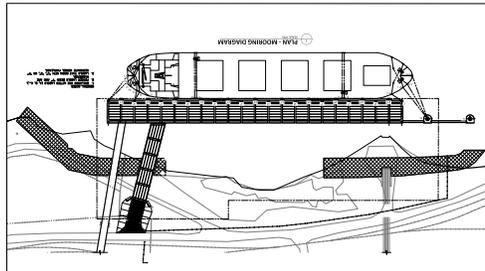
Currently, we're exploring projects that can benefit from our experience in marine asset inspection and renewable energy. But regardless of the opportunities we pursue, we know our success will always come from adhering to first principle engineering that provides our clients with sound design, an eye on constructability and a vigilance on cost.



Scott C. McClure, President



Building Better Mooring Five Best Practices for Vessel Mooring



Better ship mooring is not about blindly replicating an idealized diagram from a book. A true master of mooring understands how a mooring system behaves. These five tips can improve ship mooring and give insights into any compromises. Better informed means safer ships.

Balanced Mooring System

The mooring arrangement needs to balance the ship forces and distribute the loads evenly through all the lines. This works best when you keep the mooring arrangement symmetric, with the same number of lines forward and aft. All the lines experience similar loads in a well-balanced arrangement.

Similar Line Lengths

Balanced arrangements also extend to balancing the line lengths. If you apply the same load to a long and short line, the long line stretches further. This becomes a problem if those two lines do the same job. Whoever stretches the least becomes the weak link. Ideally, all matching sets of mooring lines should be nearly the same length.

Maintain Line Efficiency

Mooring lines do nothing if they only pull vertically. An efficient line should have a vertical angle of less than 25°. The tricky part is anticipating that line angle for the full range of loading conditions and tides. Always assume your mooring situation will get worse and leave some extra room to maintain efficient lines.

Imagine Dynamic Situations

When planning our mooring situation, we often imagine the ship resting sedately at the pier. Of course in reality, we don't need strong lines to hold a calm ship. Take a moment to imagine the worst scenario that your mooring lines must resist. Now imagine a wind gust of 60 knots rocking the ship against the pier with a strong current and a tanker passing nearby. Extreme scenarios truly test your mooring system, not placid sunny days.

Keep a Tight Leash

Since ships are big and heavy, all the momentum created by your ship as it rocks against the moorings isn't easy to stop once it starts. Adjust your moorings to remove any slack so the extra restraint reins in the ship before it ever starts to move.

Also consider a dynamic mooring analysis. This engineering analysis predicts the full forces on the ship, including ship momentum. Dynamic mooring analysis yields the most complete picture of what your lines must endure.

Conclusion

Piers rarely accommodate us with the perfect mooring arrangement. But our knowledge of the ideal yields an excellent tool to adapt our plans and anticipate the risks in each mooring arrangement. A master of mooring sees the situation now and any risks in the future.

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Founded in 1975, Alan C. McClure Associates, Inc. (ACMA) is one of the industry's premier naval architecture and engineering firms. Headquartered in Houston, Texas, we've provided advanced design and engineering services to our international clientele in offshore exploration, production and marine transportation for four decades.

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OTC Revisited

For the first time in the past 15 years, ACMA Vice President Darrel Harvey wasn't directly involved in the Offshore Technology Conference (OTC). Here are a few of his observations:

"I assumed my first reaction would be one of relief. But, in fact, what I really felt was a little bit empty! After all those years of meeting and working with a lot of great people, I missed that sense of accomplishment that comes with a job well done."

"Even though the attendance was down this year in the mid-60,000 range, I heard the technical program was successful. Just as I would have expected with all the good people who were involved, including the technical committee and the outstanding OTC staff who have to arrange, organize and manage the monumental task that is OTC."

"I'm very thankful for having the opportunity to work with such a wonderful group. However, I did enjoy some rest from the 'full throttle' schedule every OTC volunteer experiences. Maybe all I needed was a short vacation!"



ACMA Updates Corporate Website

We recently modified our corporate website to update the company's capabilities in drafting and design, naval architecture and marine engineering, project management, surveys and inspections, and legal, arbitration and negotiations. We also expanded our site's scope to include in detail our expertise in hydrostatics, hydrodynamics and structural analysis.



We continued to showcase a number of successful projects we've completed over the past four decades and we focused on how the company applies its engineering experience to provide clients a flexible environment that encourages the application of innovative, cost efficient, customized solutions to virtually any project.

If you haven't visited in our site during the past several months, we encourage you to check out all our updates at www.acma-inc.com.

Fish Farms... What Next?

Aquaculture is quickly becoming an acceptable and sustainable business for providing seafood in the future to a growing world population. InnovaSea Systems Inc. recently asked ACMA to review one of their current fish pens for structural integrity and general constructability.

According to ACMA project manager Kelly Gray, "After reviewing the design, we made a number of recommendations that will help improve performance and minimize construction costs." Those recommendations included material selections that will help reduce issues related to "dissimilar metals and galvanic corrosion", as well as suggestions for welding processes and fabrication changes.

Kelly also noted that design loads and their impact on structural members and their design were also addressed. As is the case in any design, the global structural integrity is only as good as the local structure in resisting the loads imposed on it. In other words, the chain is only as good as its weakest link. Scott McClure added, "We were excited to have this opportunity since it further demonstrates our diversity and range of applications."