SCOTT C. MCCLURE, PE

SUMMARY

Mr. McClure has been instrumental in applying first principals engineering to a wide array of naval architecture and marine engineering projects. The hull forms range from ships to semisubmersibles to jack-ups and from ULCCs to crewboats, even including round structures, and floating dry docks. Service applications include marine transportation, heavy lift, oil & gas drilling and production, multi-service and subsea construction, towing, pipelay, and passenger transport, among others.

Engineering tasks ranged from developing arrangements and the hull form, weight take offs and hydrostatic intact and damage stability analyses, structural design and analyses for global strength as well as local considerations, seakeeping studies for motions, resistance and propulsion, mooring systems and station keeping, dry docking analyses for various loading conditions and hull forms, and development of machinery systems to support the intended operations.

Mr. McClure has performed vessel, dry dock, and shipyard surveys in association with many of these projects. These surveys have been conducted worldwide, including in port and at sea.
In addition to the engineering tasks, Mr. McClure has participated in developing contract specifications for conversions and new builds for all types of marine projects as well as vetting shipyards and construction contracts on behalf of owners.

Vessel design and development have customarily been carried out in association with various class societies such as the American Bureau of Shipping (ABS), Lloyd's Register (LR), Det Norske Veritas (DNV-GL), Bureau Veritas (BV), and Nippon Kaiji Kyokari (NKK). In addition, 'flag state' requirements were also typically involved along with US CFR, IMO, SOLAS, IGC, UK Den, ILC and others.

Mr. McClure has utilized and is proficient in the following computer programs which are significant in keeping one step ahead of the evolving marine industry:

- RHINO – 3D Surface Modeling, providing direct geometry import to other programs
- FEA (ANSYS) – linear/non-linear stress and thermal structural analysis
- AQWA (ANSYS) – Hydrodynamics tool, 3D panel method for seakeeping and mooring analysis, dynamic pressures for use in FEA analysis
- GHS – hydrostatic intact and damage stability, onboard load computer
- NAVCAD – resistance, propulsion and propeller analysis
- HELYX (Engys) – OpenFOAM based CFD, multi-physics modeling tool
- AUTOCAD – Design drawings in 2D and 3D

Under his supervision, studies leading to contract level designs for production units, new build and tanker conversions, semisubmersibles and jack-ups, including worldwide surveys of candidate vessels, have been conducted. Finite Element Analysis (FEA) was used extensively for analyzing the structures. Hydrodynamic analyses providing seakeeping and station keeping results for utilization by other project team members were carried out under his direction. Re-use or replacement of marine systems was an integral part of all of these conversion projects.

Mr. McClure participated in the design and development of Compressed Natural Gas (CNG) transport vessels. Initial work included vetting of inventor concepts followed by creation of development tools for integrating gas containment in sizing of the vessels and cost analyses for a broad range of transport volumes. Mr. McClure used international codes and classification rules as guides, where applicable, in addition to participating in hazard and risk assessments of the resulting designs. He also spent time in Korea and Japan working with a major shipyard and ship operator in this multi-year development effort.

Mr. McClure has assisted with the guidance needed and has helped developed concurrently with contract level design packages, the detailed construction drawings for hull and marine systems. The detailed design is closely coordinated with the fabrication yard's contract delivery schedules and budget expectations.

Mr. McClure has performed engineering design and analyses of semisubmersibles, SWATHs, jack-up rigs, liftboats and ships. He was the project naval architect for vessel conversions from offshore supply to well test service, geotechnical service and for carriage of containers which all included extended shipyard supervision time. He engineered the conversion of two jack-up drilling units to production units together with the jack-up leg structural analyses and overseeing of leg modifications in the conversion shipyards.

Mr. McClure assisted in performing the conceptual through detailed design and construction of a high speed ABS classed Small Waterplane Area Twin Hull (SWATH) crewboat, the STILLWATER RIVER, for operation offshore Brazil. ACMA staff were involved full time in the shipyard and were responsible for supervising fabrication, launching, dock trials and performing extensive sea trials.

Mr. McClure has experience in various types of construction materials in addition to steel including aluminum, fiberglass and wood/fiberglass/carbon composites. Vessels utilizing these materials ranged from the high speed SWATH crewboat to high speed excursion entertainment vessels and passenger transport vessels. Mr. McClure has led the staff in the major redesign of two high speed excursion vessels built mostly of fiberglass in addition to supporting a small shipyard in the US Virgin Islands in analyzing their high speed passenger transport vessels built of composite structures.

Mr. McClure has performed surveys and inclinings on all types and sizes of vessels including ships, semisubmersibles and jack ups. These surveys have also included condition and valuation surveys. He has performed structural and system surveys and provided certification for a large number of dry docks at a number of different shipyards.

His Project Management roles have ranged from overseeing engineering tasks and development of project reports to shipyard fabrication owner's representation in conjunction with Class and Regulatory interface and contract management.

Notable project design experience includes a dynamic structural analysis of a large road bridge during transportation via two barges; operability analyses of heavy-lift crane barges, upgrading a heavy lift crane ship from 2,000 to 5,000 tons lift, modification and upgrading of numerous supply vessels including midbody additions, moon pools, SAT dive systems, and conversion to extended well test service.

He has supervised the shipyard phase for the upgrading and life extension of numerous offshore supply vessels, crane barges, and ships in yards throughout the U.S. Gulf of Mexico. Mr. McClure was the on-site Owner's representative for the design and construction of a 106 foot aluminum catamaran entertainment vessel built in Louisiana.

Mr. McClure spent two years as a naval architect at the U.S. Coast Guard, in Washington, D.C. He was responsible for naval architectural tasks covering ships ranging in size from 90 feet to 400 feet. During this time he was responsible for the inclining of several ships, assessment of stability for proposed mission changes, design of structural changes, and was involved in the contract design of an aluminum SWATH fisheries patrol and search & rescue vessel.

Over his career Mr. McClure has assisted with a variety of shipbuilding projects, which encompassed either project management and/or engineering management, a highlight of some of those projects are listed below:

- Construction of PV *Stillwater River* – 120ft all aluminum turbine powered 255 POB 30knot SWATH crewboat at Eastern Shipbuilding for Trico Marine, 1996-1998, ABS Classed, US Flag. Engineering, scheduling, sequencing of equipment procurement and installation (multiple long lead custom fabricated items), developed building sequence, uprighting and mating of upper hull to twin lower hulls, launching procedure, dock and sea trials.

- Newbuild 1.2M Bbl Floating Storage vessel for Conoco Phillips–permanent mooring system design change by owner interrupted the Samsung Shipbuilding schedule just before commencement of construction.

Managed complete development of alternative mooring system including purchase specification of all components, worldwide equipment procurement, coordinated fabrication and delivery of large structural components outside of Samsung for installation by the shipyard. Worked with the shipyard planning department to enable best possible schedule around this major design change.

- 128m 200 passenger Polar Expedition cruise ship *Ultramarine* in Croatia for Quark Expeditions. Delivery first quarter 2021. Technical lead with oversight of all engineering documentation, working alongside onsite project manager reviewing shipyard proposed scheduling and planning, coordinating multiple third party subcontractors, final equipment procurement selection and delivery to yard.

- Jackup conversion to production unit, work included extensive leg strengthening, process module installation, piping and foundations, quarters refurbishment for south Louisiana shipyard. Coordinated onboard installation work with shipyard on owner's behalf.

EDUCATION

Bachelor of Science in Civil Engineering – Texas A&M University

Graduate Studies – Virginia Polytechnic Institute

REGISTRATIONS & CERTIFICATIONS

Registered Professional Engineer:
- Texas # 97822

PROFESSIONAL ASSOCIATIONS

Society of Naval Architects and Marine Engineers – SNAME Fellow

Marine Technology Society

CAREER HISTORY

FORCON International – Marine Consultant
Conducts forensic engineering investigations, surety consulting, and expert witness services for cases involving issues associated with all types of marine transportation, dry docks, shipyards, and related facilities.

Alan C. McClure Associates, Inc. – President
Provides naval architecture and marine engineering services to the offshore and marine transportation industries since 1975. Services include hull form development and global performance prediction to design and specifications to construction oversight, mooring design and analysis, structural design and FEA analysis, to propulsion and marine systems.

DEPOSITION AND TRIAL EXPERIENCE

Mr. McClure has participated on over forty expert witness cases which for varying reasons not all reached the deposition or trial stage. These cases covered a broad range of issues inclusive of structural failure, stability, vessel maneuvering and response, dynamic motions, collision and allision analyses, flooding, sinkings, personal injury and shipyard contractual issues among others.

Mr. McClure participated in the successful defense of Petrobras in regards to two construction bond claims related to the conversion of a semisubmersible to a floating production unit and a VLCC to a floating production, storage, and offloading vessel. Both of these construction projects occurred in Brazil and required extensive review of large quantities of correspondence, invoices and change order claims. Mr. McClure worked closely with a forensic accountant to determine the proper value of the contract and to identify the source of the extreme cost and time

overruns. This two and a half year effort culminated in the court assessing damages of $350,000,000 to the benefit of Petrobras.

Within the past four years, Mr. McClure has submitted either an expert report or testified as an expert by deposition or at trial in various legal cases. Please see last page of CV for a listing of Cases.

ARTICLES, PRESENTATIONS AND PUBLICATIONS

"*OCEAN EVOLUTION*: A new special-purpose ship for multi-function missions" (mt) Martine Technology-A SNAME Publication, January 2019

"Features of CNG Carrier Design", The 10th International Symposium on Practical Design of Ships and Other Floating Structures ("PRADS"), 2007.

"Deepwater Field Development-FPSOs", Presentation for the Marine Technology Society Dynamic Positioning Conference, 2004.

"CNG Carriers Applied to Remote Marginal Gas Field Developments", Royal Institute of Naval Architects, 2004.

"Designing Ships for an Innovative Gas Transport Industry", The Society of Naval Architects and Marine Engineers Texas Section, 2003.

"The Impact of Compressed Natural Gas Shipping on Offshore Gas Development", Offshore Technology Conference, 2003.

"The Challenge of the Legal Road", The Society of Naval Architects and Marine Engineers Twelfth Offshore Symposium, 2003.

"Personnel Transport in the Gulf of Mexico", The Society of Naval Architects and Marine Engineers Ninth Offshore Symposium, 2000.

"FPSO/FSO – Conversion Vs. New Build", co-authored with Alan C. McClure, The Society of Naval Architects and Marine Engineers Third Offshore Symposium, 1993.

"Fatigue Criteria for Jackup Design", The Society of Naval Architects and Marine Engineers Design Criteria and Codes Symposium, 1991.

"Settlement of Mat-Supported Mobile Units in Very Soft Clays", co-authored with W.R. Cox and K.H. Sorensen, Offshore Technology Conference, 1990.

"Dynamic Positioning Dynamics", co-authored with Alan C. McClure and R.Y. Edwards, Jr., The Society of Naval Architects and Marine Engineers First Offshore Station keeping Symposium, 1990.

Mr. McClure also co-authored and co-instructed a Short Course at the 2014 SNAME Maritime Convention titled **Global Analysis – An Introduction to MetOcean Data and Spectral Analysis.**

LARGE PROJECT SCHEDULING EXPERIENCE

Hyundai Offshore – P33 & P35 FPSO Conversions for Petrobras
ACMA was contracted by Hyundai Offshore to develop the contract engineering for conversion of two vessels, a VLCC and an OBO to FPSOs, P33 & P35 respectively for the ultimate client, Petrobras. ACMA provided a bi-weekly schedule report using the Primavera software showing all engineering activities for the two simultaneously occurring projects. All dependencies and constraints were defined to enable the critical path to be identified and managed throughout the 12-month duration of this engineering project. ACMA was required to present and discuss the schedule with Petrobras and Hyundai Offshore to ensure all critical activities were clearly identified and being properly managed to minimize any delay in the schedule.

KBR – Barracuda & Carratinga Offshore Development Project for Petrobras
KBR was under contract to Petrobras for the complete development of the Barracuda and Carratinga oil fields, a $1.25B development project. KBR and Petrobras got into a dispute about the schedule and resulting project delays and cost overruns.

ACMA was requested to review and discuss the overall project schedule prepared by KBR using the Primavera software. This schedule covered all aspects of the full field development project from production drilling to wellhead protectors and installation to pipeline and PLEMs design and intra-field flow line design and installation to FPSO design, construction, transportation, installation, and riser pull-in to start-up of production. This schedule was extremely large with thousands of lines including dependencies, constraints, contingencies, and identification of the critical path for each phase of the project as well as the overall critical path for the entire development project. Scott McClure was one of three people working on this project full time for four months to develop a full understanding of the project, review the various versions of the schedules which KBR had prepared, and the issues being contested. Management of the critical path and how it changed between the different versions of the schedule were at the crux of the dispute. Ultimately this legal case was settled before a full project report was developed by ACMA.

Helix Energy Solutions Group – Helix Producer One DP FPO
Helix Energy Solutions converted a ship into a dynamically positioned floating production offloading ship. The project started out in a Croatian shipyard, went to a Greek shipyard for completion of critical afloat tasks prior to steaming to the US Gulf coast and then was completed in South Texas for final deployment 90nm off the Louisiana coast. ACMA was contracted to provide engineering and project management for the conversion including overview of model testing, marine systems re-design, extensive structural design and FEA analysis, production topsides foundation design, weight control, stability, Class and Regulatory interface and formal tracking of all comments (Regulatory & Class), and to perform stability tests in European and US shipyards at critical stages of the project. ACMA used an in-house developed task tracking system for the 166 separate engineering tasks and to manage the 16 person engineering team working on this project for 29 months. ACMA interfaced with the shipyards and later the fabrication yard in South Texas to ensure their respective receipt of critical engineering information. As part of this scheduling system, all client supplied information required for each task was tracked to ensure timely receipt and the correct version of vendor data was being utilized for the detailed engineering. ACMA also provided document control for Helix for the entire project.

Shipbuilding Project Management Experience

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SCOTT C. MCCLURE, PE – DEPOSITION AND/OR TRIAL SUMMARY

Date	Case Name	Client	Location
2018	Bryant Sias v. Quality Engineering Services, Inc. **Case No. 6:15-cv-2223**	Plaintiff	United States District Court, Western District of Louisiana-Lafayette Division
2017	Armando Villafuerte v. Antillana Holdings, Inc., et. al. **Case No. D-198065**	Defendant Antilliana Holdings & Transgas	136th Judicial District Court, Jefferson County, Texas
2016	Joseph Ryan Barcot v. Trident Circle, Inc. & Porto Costello, Inc., et. al. **Cause No. 2014-72886**	Defendant (Deposition) Forcon Power LLC	113 Judicial District Court of Harris County, Texas
2016	NuStar Terminals Operations, L.P. v. MTM Mumbai et. al.	Plaintiff	District Court for the Southern District of Maryland-Baltimore Division
2016	Woods v. Saipem America, Inc., et al. **Cause No. 14-CV-0444 consolidated with Cause No. 14-CV-0503**	Plaintiff	405th Judicial District Court of Galveston County, Texas
2016	Miller, Charles v. Noble Drilling Services, Inc., et. al. **Cause No. 3:15-cv-00192**	Defendant (Trial) Noble Drilling Services, Inc.	United States District Court Southern District of Texas Galveston Division
2015	Marquette Transportation Company Gulf-Island, LLC v. M/V Chembulk Westport; MI-Das LINE SA; MTM Ship Management PTE LTD; Chembulk Management, LLC **Cause No. 2:13-cv-06216; CW 2:14-cv-02071**	Plaintiff	US District Court of Eastern District of Louisiana
2015	Jason Derouen v. Hercules Liftboat Co. LLC, Y&S Marine, Inc. and Sun Boats, Inc. **Cause No. 13-4805 c/w 13-4806 & 13-5060**	Defendant (Deposition) Y&S Marine, Inc.	Eastern District Court, Louisiana
2013	Williams Field Services – Gulf Coast Company, L.L.P. v. Mariner Energy, Inc, et. al. **Cause No. 4:06-CV-03846**	Defendant (Trial) Noble Drilling Services, Inc.	Southern District Court, Texas
2013	Jerimar Keyes v. Transocean Offshore Deepwater Drilling, Inc., et. al., **Cause No. 2012-44013**	Defendant (Deposition) Transocean	270th Judicial District Court of Harris County, Texas