

EUGENE MASSION

Education

University of California Santa Barbara
1979 B.S. Mechanical Engineering
1982 M.S. Mechanical Engineering, Ocean Engineering emphasis

Work Experience

1980 - 1982	Development Engineer	University of California Santa Barbara
1982 - 1983	Research Engineer	Dynamics Technology Inc.; Torrance, CA
1983 - 1993	Mechanical/Electrical Engineer	SAIC/Maripro; Goleta, CA
1993 - 1995	Chief Engineer	SAIC/Maripro; Goleta, CA
1995 - 1997	Mechanical Engineer	Monterey Bay Aquarium Research Institute
1997 - 2004	ME Group Supervisor	Monterey Bay Aquarium Research Institute
2004 - Present	Senior Engineer	Monterey Bay Aquarium Research Institute

System Engineering Experience

Mr. Massion has been involved in the design, planning, engineering and installation of ocean observing systems for more than 25 years. During that time he has been involved in every aspect of the process: development of customer requirements, system engineering, detailed mechanical electrical and software design, analysis, fabrication, test, installation, commissioning and user training.

Since 1999, Mr. Massion has been extensively involved in the planning and design of ocean observing systems for oceanographic research purposes. Mr. Massion is the co-PI on the operation and maintenance grant for the MARS cabled observatory in Monterey Bay. He was also the System Engineer during the development of this system. MARS is the first observatory implementing a new generation of power and communication resources for ocean observing systems and has been operational since November of 2008. Mr. Massion served on the Ocean Observing Initiative (OOI) Executive Steering committee for 3 years. OOI is currently funded by the US National Science Foundation to develop a range of observing systems with a budget in excess of 350 million dollars. He also served on the OOI Engineering and Sensors Committees.

As a senior engineer at MBARI, Mr. Massion has actively collaborated with MBARI scientists to turn science needs into working systems. Projects include a cabled systems for observing submarine canyon dynamics; development of the ESP, an automated sampler applying molecular techniques to in-situ harmful algal bloom studies; a rapid turnaround experiment for the controlled release of CO₂ at depth to help understand the impacts of CO₂ sequestration in the ocean; a high bandwidth acoustic recorder for listening to sediment transport events in the Monterey Canyon and a un-manned, free drifting buoy for profiling oceanographic instruments in the upper 200 meters of the ocean.

A significant part of Mr. Massion's job at SAIC/Maripro was providing the system engineering necessary to turn customer needs into systems. When the requirements were defined by the customer, Mr. Massion participated in and managed proposal efforts for small projects as well as large projects exceeding 50 million dollars. When the requirements were not well defined, Mr. Massion worked closely with the customer to define concepts and develop formal specifications. An example project was developing the system concept for the next generation (1995) Swedish Navy anti-submarine warfare vessel. This system included multi-beam side scan and bathymetry systems, towed arrays, two automatically deployed and recovered ROVs, and the command, control and communication system necessary to integrate the various subsystems. Mr. Massion also was the system engineer for the signal processing subsystem of a multi-sensor harbor defense system. Other system engineering assignments included a control system providing complete remote operation of a 35 foot, 35 knot target vessel, an advanced sonar simulator and a computer aided navigation and control system for sub-sea cable system surveys and installations.

Management Experience

Mr. Massion served as the ME Group Supervisor at MBARI for 7 years where he instituted standards for design, drafting, documentation, checking and design reviews by adapting appropriate industry standards to the unique research environment at MBARI. He has extended the design and analysis capability of the group by implementing finite element analysis and modern 3D CAD tools. In this position, Mr. Massion has made the establishment of "team" relationships with other divisions at MBARI a priority for the ME group with demonstrable success. Mr. Massion has also been active in refining the project planning and management process for the Development Group as well as the Institute. Project management responsibilities include the ESP, an instrument that applies molecular techniques to the detection of harmful algae in-situ.

Prior to MBARI, Mr. Massion was a Mechanical Engineer and eventually Chief Engineer in the Design Engineering Division at SAIC/Maripro, a group composed of between 10 and 15 mechanical, electrical and software engineers, designers and technicians. In this position, he was responsible for system engineering of large and small systems, design reviews, and definition of design, documentation, review and quality processes to military and ISO 9000 standards. In addition, Mr. Massion was project manager with technical and financial responsibility for several projects including a 1.2 million dollar harbor defense signal processing subsystem successfully delivered on time and on budget.

Mechanical, Electrical and Software Engineering Experience

Mr. Massion's engineering experience includes mechanical, electrical and software design for a range of ocean going and laboratory systems. These include underwater acoustic signal processing systems, shipboard deployment equipment, navigation systems, laboratory and in-situ oceanographic research instrumentation, marine mammal monitoring instruments, ROV tools and toolsleds and precision computer numerical control systems for the semi-conductor industry. Analytical tasks include computational and experimental fluid mechanics studies, underwater acoustic transducer modeling, signal processing and reliability analysis of complex underwater communication networks.

Mr. Massion has worked extensively with the Marine Operations group while at MBARI and the Ocean Engineering division at SAIC/Maripro in the design of specialized ship board handling equipment. He has spent several months a year at sea in support of cable laying, survey and ROV operations and acoustic data acquisition projects. In support of these operations, Mr. Massion was a member of the SAIC/Maripro dive group qualified in SCUBA and surface supplied diving.

Panel and Committee Memberships

2004 – 2007 ORION Executive Steering Committee
2005 – 2007 ORION Engineering and Sensors Subcommittees
2003 DEOS Cable Re-use Committee
2003 UNOLS Working Group on Ocean Observing Facility Needs

Papers, Talks and Presentations

Massion, G., K. Asakawa, A.D. Chave, B. Howe, T. McGinnis, P. Phibbs, D. Rodgers, Y. Shirasaki, H. Mikada, and K. Kawaguchi, New Scientific Cabled Observing Systems: NEPTUNE and ARENA, *Proc. Suboptic 2004*, Monaco, 29 Mar-1 Apr 2004, 3 pp.

Cabled Observatory Engineering Overview: The Technical Capabilities; presented at The Cabled Regional Observatory Workshop (aka RECONN), San Francisco, October 7-9, 2003

Critical Technology Developments for Regional Scale Ocean Observatories; presented at The Oceanography Society meeting, June 2003.

Massion, G., P. Beauchamp, A.D. Chave, T. McGinnis, P. Phibbs, and D. Rodgers, System

Engineering for a Regional Scale Cabled Observatory: Process And Progress, *Proc. 3rd Int. Workshop on Scientific Use of Submarine Cables and Related Technologies*, Tokyo, Japan, 25-27 June 2003, 234-239.

Maffei, A., J. Bailey, A. Bradley, A.D. Chave, X. Garcia, H. Gelman, S. Lerner, G. Massion, and D. Yoerger, A modular gigabit Ethernet backbone for NEPTUNE and other ocean observatories, *Proc. 3rd Int. Workshop on Scientific Use of Submarine Cables and Related Technologies*, Tokyo, Japan, 25-27 June 2003, 191-196.

Technologies for regional-scale cabled observatory infrastructure: the NEPTUNE approach Presented at EGS-AGU-EUG Joint Assembly; Nice, France 06-11 April 2003 Chave, A.D.; Beauchamp, P.M.; Gaudet, S.J.; Kirkham, H.; Howe, B.M.; Maffei, A.; Massion, G.; McGinnis, T.; Phibbs, P.; Rodgers, D.

MARS: a cabled observatory testbed in Monterey Bay Presented at EGS-AGU-EUG Joint Assembly; Nice, France 06-11 April 2003 **McNutt, M.**; Massion, G.; Raybould, K.; Bellingham, J.; Paull, C.

ROV Technology and Ocean Science at the Monterey Bay Aquarium Research Institute with Ken Johnson presented at UCSB January 27, 2003

Chave, A., H. Kirkham, A.R. Maffei, G. Massion, H. Frazier, A.M. Bradley, S.J. Gaudet, W. Wilcock, D.H. Rodgers, P.M. Beauchamp, J.C. Madden, and B.M. Howe, The NEPTUNE Scientific Submarine Cable System, *Proc. Suboptic 2001*, 4th International Convention on Undersea Communications, Kyoto, Japan, 20-24 May 2001, 4 pp.

Maffei, A.R., A.D. Chave, G. Massion, S.N. White, J. Bailey, S. Lerner, A. Bradley, D. Yoerger, H. Frazier, and R. Buddenberg, NEPTUNE Gigabit Ethernet Submarine Cable System, *Proc. IEEE Oceans 2001*, Honolulu, HI, Nov 2001, 1303-1310.

Rodgers, D.H., P.M. Beauchamp, A.D. Chave, S. Gaudet, H. Kirkham, A. Maffei, G. Massion, T.M. McGinnis, and W.S.D. Wilcock, NEPTUNE Regional Observatory System Design, *Proc. IEEE Oceans 2001*, Honolulu, HI, Nov 2001, 1356-1365.

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