

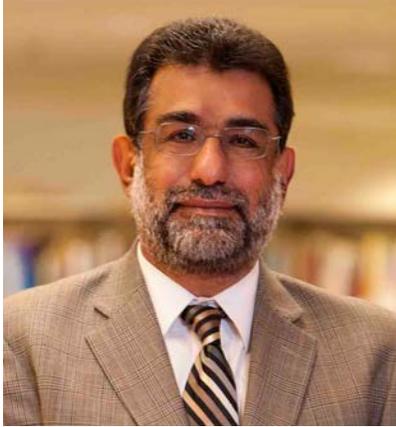
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Dr. Qassim Abdullah

Dr. Qassim Abdullah, Chief Scientist and Senior Associate, Woolpert, Inc.

Dr. Qassim Abdullah is a scientist with more than 40 years of combined industrial, research and development (R&D), and academic experience in analytical photogrammetry, digital remote sensing, and civil and surveying engineering. His current responsibilities include designing and managing strategic programs to develop and implement new remote sensing technologies focused on meeting the evolving needs of geospatial users. He is the Chief Scientist for Woolpert Geospatial Services and a member of the Woolpert Labs R&D team. He serves as an adjunct professor at the University of Maryland, and at Penn State, where he teaches graduate courses on unmanned aircraft systems (UAS), photogrammetry and remote sensing. He evaluated and introduced a Geiger-mode and single photon lidar to the geospatial industry while leading Woolpert research activities surrounding UAS sensor calibration and workflow development. He publishes a monthly column, "Mapping Matters," in the American



Society for Photogrammetry and Remote Sensing (ASPRS) journal, PE&RS and has several prestigious awards from ASPRS such as the Life Time Achievement Award and the Photogrammetric Fairchild award. He co-authored the new "Positional Accuracy Standards for Digital Geospatial Data". Dr. Abdullah is a certified photogrammetrist and licensed professional surveyor and mapper in Florida, Oregon, Virginia and South Carolina. He is also a certified thermographer through the FLIR Infrared Training Center and a Certified GEOINT Professional in Remote Sensing and Imagery Analysis (CGP-R) through the United States Geospatial Intelligence Foundation (USGIF). Dr. Abdullah obtained his doctorate and master degrees in photogrammetry from the Civil Engineering Department at the University of Washington in Seattle.

Capt. Anuj Chopra

Capt. Anuj Chopra, Vice President - Americas, RightShip



With over 30 years maritime experience both at sea and onshore, Capt. Chopra drives business development, leads the vetting team, and fosters industry and customer relations in the Americas region focused on risk management for the maritime industry. Rightship's mission is to improve the safety and environmental sustainability of the maritime industry. He is the regional business head, leading the vetting team in assessment and management of risk associated with vessel operations, liaising with entities to improve maritime and environmental risk management for the industry, liaising with ports for incentivizing sustainable shipping, and ensuring business regulatory compliance. He formerly served in risk

management roles for the Anglo-Eastern Group, a company with 545 ships including 170 in the U.S. where he served as the President with operational responsibility for risk evaluation, assessment and mitigation, and as the U.S. representative handling fleet operations. Capt. Chopra began his seafaring career as a deck cadet working his way up to Captain and holds a Commonwealth Extra Masters Certificate of Competency, and Shipping Management from the Indian Institute of Management, Ahmedabad. He serves on the following: fellow, The Nautical Institute, and chairman of the U.S. Gulf Branch; as a supporter of seafarer welfare, he's an Ambassador for the Sailor Society; member, Board of Directors of the Houston International Seafarers Center; President, the Industry Advisory Board for the Supply Chain and Logistics Technology Degree at the University of Houston; and member, Board of Directors (and Treasurer) of NAMEPA – North American Marine Environment Protection Association.

Mr. Sean M. Duffy, Sr.

Mr. Sean M. Duffy, Sr., Executive Director, Big River Coalition



Mr. Duffy directs the Big River Coalition which is committed to protecting maritime commerce across the Mississippi River and Tributaries (MRT). He leads the Coalition which focuses on maximizing transportation efficiencies on the deep-draft ship channel from Baton Rouge to the Gulf of Mexico with a dedicated focus on channel maintenance. The Big River Coalition is at the forefront of efforts to deepen the Mississippi River Ship Channel to 50 feet. He spearheads the visions of the future of the MRT to ensure that systematic approaches protect maritime trade by maintaining fully authorized channel dimensions while also updating and maintaining navigation infrastructure, specifically the locks and dams along the MRT. The Big River Coalition missions are focused on securing increased funding from the Harbor Maintenance Tax and the Inland Users Fuel

Tax, efforts to deepen the Lower Mississippi River to 50 feet and to increase the beneficial use of dredge material or “sediment recycling.” Mr. Duffy also serves as an Executive Vice President / Maritime Advocate for the parent company the New Orleans Steamship Association d.b.a. Louisiana Maritime Association. Mr. Duffy is a proponent for local industry specializing in advocating on Capitol Hill to secure supplemental funds for maintenance dredging and waterway maintenance. Previous employment experiences include various management positions, Boarding Agent, Deckhand, Stevedore General Superintendent and Marine Surveyor. Mr. Duffy is familiar with obstacles faced by the maritime industry, both nationally and those specific to Louisiana, and has been recognized for his efforts on coastal restoration through maintenance dredging.

Dr. Nicole Elko

Dr. Nicole Elko, Science Director, American Shore and Beach Preservation Association (ASBPA), Executive Director of the South Carolina Beach Advocates, and President of Elko Coastal Consulting



Dr. Nicole Elko is one of the three civilian members of the U.S. Army Corps of Engineers' Coastal Engineering Research Board (CERB). She received her Ph.D. (Geology) from the University of South Florida after working with the USGS Coastal Marine Geology Program, and while serving as the coastal coordinator for Pinellas County, FL. Dr. Elko has 20 years of experience in coastal resource management and has managed or assisted with more than 20 beach preservation projects along the U.S. Southeast and Gulf coasts. She works with various State and Federal agencies to communicate the coastal resilience needs of local communities. Dr. Elko has co-authored a book on coastal management, numerous technical reports, and 16

journal publications, including *The Future of Nearshore Processes Research*, a seminal report that provides a research vision developed by the nearshore community. At ASBPA, Dr. Elko helps provide science-based guidance to Congress, Federal and State agencies, and local communities on national coastal resilience challenges. She serves a co-Executive Director for the grass-roots U.S. Coastal Research Program. Regionally, Dr. Elko serves on South Carolina Governor McMaster's Floodwater Commission, and the Southeast Coastal Ocean Observing Regional Association (SECOORA) Science Committee. Her business provides hydrographic surveying, coastal research and advocacy services. Dr. Elko teaches a "Beaches 101" training course to regulators and elected officials in the Carolinas.

Mr. Lindsay Gee

Mr. Lindsay Gee, Mapping and Science Coordinator, Ocean Exploration Trust



Mr. Lindsay Gee joined the Ocean Exploration Trust and coordinates the science and mapping activities conducted on the *E/V Nautilus*. He has four decades of broad experience working in the international hydrographic surveying and ocean mapping industry. This experience ranged from working at a national hydrographic service, then consulting in the broader offshore industry, and leading a small innovative company providing software and services to the international hydrographic industry. His roles included conducting and managing operational hydrographic surveys for nautical charting, client representation for geodetic and geo-hazard surveys in the oil and gas industry, through to leading a team in development of software applications to support hydrographic surveying and ocean mapping.

During the latter 15 years he built a deep understanding and expertise in guiding the transfer of technology from research at partner ocean mapping research institutions, and leading the development of an agile company to successfully interpret industry requirements and trends. His most recent

consulting was focused on the technology used in the ocean mapping industry, and the strategic planning and business development required to identify and transition innovative technology to products, services and solutions for general operational use. Mr. Gee is affiliated with the Hydrographic Society of America, Surveying and Spatial Sciences Institute, Australasian Hydrographic Society, Marine Technology Society and American Geophysical Union.

Ms. Deanne Hargrave

Ms. Deanne Hargrave, Senior Geomatics Operations Surveyor, Geo Operations Group, Shell International Exploration and Production

Ms. Hargrave is currently planning, executing and delivering technically complex and logistically challenging offshore geophysical projects for Shell. Over the past 20 years, she has conducted



numerous shallow hazard surveys, geotechnical investigations, seep surveys, and navigational positioning projects at worldwide locations. Deanne strives to anticipate industry technical requirements, interpret regulatory trends, and adopt innovative technologies. She began her career in 1998 as a geotechnical engineer conducting onshore investigations with GeoEngineers. Beginning in 2004, she was project manager and party chief for offshore geophysical and geotechnical investigations throughout Alaska. She was also instrumental in creating Geo LLC, a company specializing in shallow hazard surveys for the oil and gas industry. In 2011, after acquisition of Geo LLC by Fugro, she was promoted to Operations Manager for Fugro Geo Services - Alaska, supervising technical personnel, implementing quality, health, safety and environmental management systems, and managing operations/logistics for large offshore projects in Alaska, Caribbean, Brazil, and New Zealand. In 2014, she joined Shell in Alaska to deliver seabed clearance/geotechnical investigations and environmental baseline surveys. Deanne was responsible for implementing Shell's multi-year Marine Mammal Monitoring and Mitigation Program, including an industry-leading underwater sound source verification program, and improved logistics and operational efficiency by managing project risks and collaborating with stakeholders. She also successfully identified two innovative methods for completing subsea construction activities necessary in Arctic waters. She completed a B.S. in Civil Engineering at Gonzaga University, continuing education in Arctic Engineering and Project Management at the University of Alaska Anchorage, and is a Professional Engineer licensed in Alaska and Texas.

Mr. Edward (Ed) J. Kelly

Mr. Edward Kelly, Executive Director, Maritime Association of the Port of New York/New Jersey

Mr. Kelly is the Executive Director of the Maritime Association of the Port of New York/New Jersey. Founded in 1873, the Maritime Association has a proud history of serving as a Maritime Exchange, industry association, and general advocate of the Maritime-related activities of the tri-state Port. Ed is responsible for managing the activities of the Association and developing the enhanced safety, security,

ecological sanctity, and economic viability of the many maritime –related industries in the Port. Ed held a series of senior executive level positions in the Liner business including: President and CEO of Cho Yang (America), Inc.; Senior Vice President of Inchcape Shipping Services; President and CEO of Nippon Liner Systems (USA); and Executive Vice President of Y.S. Line (USA). He provided executive



level consulting services to firms such as Maher Terminals, Inc.; The Port Authority of New York and New Jersey; Deutsche Afrika Line; Paul F. Richardson Associates; the Maritime Association of the Port of New York; and Strachan Shipping Agency. Ed had managed the Transportation, Logistics, and Management Division of the Global Maritime and Transportation School of the U.S. Merchant Marine Academy at Kings Point, New York. Ed has devoted many years as a Director of the New York Shipping Association, the Carriers Container Council, the USMX, and the Steamship Operators Intermodal Committee and served on joint labor /management committees and trust funds. He is the President of the Maritime Information Service of North America (MISNA), Vice President of the National Association of Maritime Organizations (NAMO), Vice Chairman of the Mid Atlantic Regional Association Coastal Ocean

Observing System (MARACOOS), a Director of the United Seaman’s Service, and a Director of the Urban Assembly School of Global Trade and Transport. He was named as a member of New York City’s Mayoral Maritime Advisory Board. A graduate of the U.S. Merchant Marine Academy, he sailed as a deck officer on U.S. Flag ships. Ed completed an MBA at Pace University and has a certificate in Intermodal Transportation from the FDR Institute. He received an award for Outstanding Professional Achievement from the Kings Point Alumni Association and in 2009, the Journal of Commerce named Ed to their Leadership Roll in the Global Logistics Industry.

Capt. Ann Kinner

Capt. Ann Kinner, Owner, Seabreeze Books and Charts, and Chair, San Diego Harbor Safety Committee, San Diego, CA



Capt. Ann Kinner owns and manages Seabreeze Books and Charts in San Diego, California, which provides navigation tools and publications to all sectors of the maritime community, as well as charts provided by hydrographic services from Canada, Mexico, France, the British Admiralty, NOAA, NGA, and offers digital navigation products from Nobeltec and C-Map for use on a variety of on-board systems and personal computers. In addition to instructing boaters in the operations and systems of sail and power vessels, she worked with TowBoat/US as the primary watch-stander and rescue boat driver in San Diego. Her nearly 15 years with the Coast Guard Auxiliary and more than three decades of teaching all things boating give her a broad perspective on the needs, curiosities, and varied interests of the recreational and professional boating communities. She was appointed to the San Diego Harbor Safety Committee, and has served as the Chair since July 2016. Frequently called upon to speak to boating associations, she assisted with

navigational guidance for the CUBAR powerboat rally from San Diego to La Paz, Baja California, and was a speaker and instructor for the annual Women's Sailing Convention in Newport Beach. Capt. Kinner grew up sailing in Narragansett Bay, Rhode Island. She has a lifetime love of the ocean, is a live-aboard boater, experienced on sail and power boats - both simple and high-tech, and is familiar with harbors from Ensenada to Santa Barbara.

Dr. David Maune

Dr. David F. Maune, PhD, CP, CFM, PSM, PS, GS, SP

Associate Vice President and Senior Remote Sensing project manager, Dewberry Engineers, Inc.

Dr. David Maune manages major geospatial products and services contracts with the U.S. Geological Survey (USGS) and National Oceanographic and Atmospheric Administration (NOAA) – both the



National Geodetic Survey (NGS) and the Office for Coastal Management (OCM). He earned his MS and PhD degrees in geodesy and photogrammetry from The Ohio State University. He manages Dewberry's statewide mapping of Alaska with airborne interferometric synthetic aperture radar (IFSAR) to satisfy urgent requirements for aviation safety and to help the state and federal agencies to manage the vast natural resources in America's Last Frontier. He authored major positional accuracy standards, guidelines and specifications published by the Federal Emergency Management Agency (FEMA), the National Digital Elevation Program (NDEP), and the American Society for Photogrammetry and Remote Sensing (ASPRS), including the *ASPRS Positional*

Accuracy Standards for Digital Geospatial Data (2015). He is specialized in topographic mapping and elevation data and is the editor of three editions of ASPRS's "Digital Elevation Model Technologies and Applications: The DEM "Users Manual". For NOAA, he authored the *National Height Modernization Study, Report to Congress*, on how to modernize the national height system. For USGS, he authored the *National Enhanced Elevation Assessment* that served as the blueprint for the 3D Elevation Program (3DEP) which focuses on standardized lidar mapping nationwide. For the U.S. Army Corps of Engineers (USACE), he authored EM 1110-1-1000, *Photogrammetric and Lidar Mapping* (2015). He authors a column in LiDAR Magazine. He is a retired U.S. Army Colonel, and served as Director, U.S. Army Topographic Engineering Center (TEC). He is an ASPRS Fellow and charter member of the National Geospatial Advisory Committee (NGAC); an ASPRS Certified Photogrammetrist (CP); and an ASFPM Certified Floodplain Manager (CFM). His recent awards include: 2016 ASPRS Photogrammetric Award; and the 2018 Outstanding Personal Achievement from the International LiDAR Mapping Forum (ILMF).

Captain Anne McIntyre

Captain Anne McIntyre, Pilot, Columbia River Pilots



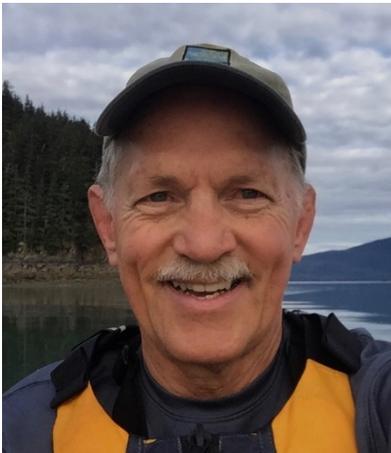
Capt. Anne L. McIntyre is a 1988 deck officer graduate of the California Maritime Academy. Upon graduation she was hired by Chevron Shipping Co. and served 8 years in both sea-going and shore-based positions. In 1996, she was selected by the Oregon Board of Maritime Pilots to become the first woman Columbia River Pilot. During her tenure as a Pilot, she has served in a number of management positions including Administrative Pilot, Commissioner, Oregon Board of Maritime Pilots and Vice Chair of the Lower Columbia River Harbor Safety Committee. In 2013, she earned a MS in Transportation and Engineering Management, also from the California Maritime Academy where she is an active member of the CMA Alumni Association. In her spare time she enjoys sailing, reading, a variety of

snow and water sports and viticulture.

Captain (ret. USCG) Ed Page

Captain Ed Page, U.S. Coast Guard (Retired), Executive Director, Marine Exchange of Alaska

A 1972 graduate of the U.S. Coast Guard Academy, Captain Page sailed on Coast Guard vessels sailing Atlantic, Pacific and Alaska waters followed by assignments in marine safety, environmental protection and search and rescue. Later in his Coast Guard career he held positions as Chief of



Environmental Protection during the Exxon Valdez oil spill response, as Captain of the Port for Los Angeles-Long Beach and as Chief of Marine Safety and Environmental Protection for Coast Guard Pacific Area. After retiring from the Coast Guard in 2001 he established the non-profit Marine Exchange of Alaska and led the development of an extensive Automatic Identification System (AIS) for Alaska comprised of over 130 AIS receivers extending throughout Southeast Alaska, the Aleutian Islands and the Arctic. This vessel tracking system is used and largely funded by the Coast Guard, the State of Alaska and the maritime industry. With assistance from the Alaska Ocean Observing System (AOOS) he has implemented the installation of environmental stations at over 45 locations in Alaska that transmit weather data to mariners over the AIS network and via the internet. He also engaged

the Marine Exchange in a Cooperative Research and Development Agreement with the Coast Guard R&D Center to develop an Arctic, Next Generation Navigational Safety Information System that is providing the capability to communicate information on the location of dynamic marine protected areas and safety information to vessels using AIS. The Marine Exchange has also employed AIS to automatically detect and report violations of vessel speed restrictions in whale protected areas of Glacier Bay. Ed is an avid kayaker and sailor and lives in Juneau with his wife Barbara.

Captain Salvatore Rassello

Captain Salvatore Rassello, Director, Nautical Operations, Carnival Cruise Lines



Captain Rassello is a member of the shore-side marine operations division at Carnival Cruise Lines headquarters. He brings knowledge in maritime operations related to navigation and as a vessel operator. He has understanding of port operations at the corporate level and port administration. As Fleet Captain for Corporate Maritime Quality Assurance, he has background in maritime safety culture and knowledge of corporate and industry standards. Captain Rassello represents the cruise industry as a member of the Cruise Lines International Association's (CLIA) Navigation & Hydrographic Working Group and Operations Working Group, comprised of representatives from all of the major ocean-going cruise lines. He has geographic areas of expertise in the Caribbean Sea, Gulf of Mexico, north and central Atlantic Ocean, and east Pacific Ocean.

Highlights: He is an experienced Master with 40 years of at-sea experience, 17 years spent as Master on Cruise ships. He is responsible for Safety of Navigation, Itinerary/ Voyage Passage Planning, Port Operations, and Port Assessments for the entire fleet of 24 ships. He represents CCL at CSMART Governance committee and all other nautical related trainings at the Corporate Maritime Training Center (CSMART) in the Netherlands. He is certified in Maritime (BRM/ECDIS), Bridge Resource Management/Electronic Navigation and Marine Incident Investigation Certified and Deputy Director for the Company SIRP (Ship Incident Response Plan).

Education and Qualifications:

Francesco Caracciolo Maritime Academy, Italy.

Licensed Ocean Going Master by the Italian Maritime Ministry of Transportation and IMO Certified.

Licensed Instructor for Firefighting, PSSR, and Personal Survival Techniques.

Certified Ship's Security Officer- Certified trainer for BRM/ECDIS.

Mr. Edward Saade, HSRP Co-Chair

Mr. Edward J. Saade, Group Director Americas, President USA, Fugro Inc.



Edward J. Saade has 40+ years of Hydrographic, Coastal Zone Management, Geospatial Survey and Ocean Engineering experience. Since 2014, Mr. Saade has been serving as Americas Regional Director for the Fugro Marine Division and in June of 2015 was promoted to the President of Fugro (USA) Inc., serving Fugro in both capacities. His responsibilities include the management of the largest of Fugro's Regional Divisions, overseeing a staff of 1200, operating from eleven primary offices located from Alaska and Canada to Brazil, with multiple offices in the USA, Mexico, Colombia and Trinidad and Tobago; operating in virtually every country in the Region. He has overseen the expansion of Fugro's capabilities to become the world leader in hydrographic LiDAR, multi-beam and backscatter data acquisition and mapping techniques for charting, Coastal Zone and Essential Fish

Habitat analysis. These techniques have been directly applied to the offshore oil and gas and construction industries and a wide variety of national hydrographic offices including NOAA, CHS (Canada), GCS (Kingdom of Saudi Arabia), RAN (Australia) and SHOM (France). He has been actively involved in high resolution geophysical survey data acquisition and interpretation programs, both domestically and overseas. He holds a bachelor's degree in geology from the University of California, Santa Barbara, and completed Ph.D. courses and research in marine geophysics at the Hawaii Institute of Geophysics. Mr. Saade is a California Professional Geophysicist, and has authored/coauthored over 70 reports and studies related to seafloor geology and sub-bottom conditions. He is the HSRP chair.

Ms. Julie Thomas

Ms. Julie Thomas, Senior Advisor, Southern California Coastal Observing System (SCCOOS) and Program Manager for the Coastal Data Information Program (CDIP) Scripps Institution of Oceanography, La Jolla, CA (retired)

Since 1976, Julie Thomas has worked at the Scripps Institution of Oceanography, and served as the Program Manager and Principal Investigator for the Coastal Data Information Program (CDIP) and as a Senior Advisory to the Southern California Coastal Ocean Observing System (SCCOOS). She served as the Executive Director of SCCOOS from 2009 - 2018. She worked with a breadth of projects. She has been an advocate for sustained funding for real-time monitoring and model validation, working closely with many federal agencies, in particular the US Army Corps of Engineers (USACE) and NOAA. She has worked closely with many of the coastal USACE whose projects are dependent upon high



quality, long-term wave data, realizing that this long term history is critical in infrastructure design and repair. Through the State of California, she has obtained sustained project funding, working closely with the recreational and commercial maritime community, including the Coast Guard and state Oil Spill Prevention and Response agencies. At the local and regional level, she is engaged with coastal issues, particularly those that are affected by energetic wave action, providing data for infrastructure design, shoreline change and sea level rise. Ms. Thomas has extensive outreach experience. She has focused on listening to comments from the maritime users/operators, spent many hours walking the fishing docks with nautical chart in hand, discussing the best location for a buoy deployment, and attending the maritime industry meetings to help resolve their concerns. Her priority is to maintain standards for collecting and disseminating high quality data, assure that these data are curated and archived at the NOAA National Centers for Environmental Information (NCEI), and advocate for the integration and communication of information that helps ensure safety, economic and environmental resilience, and the sustainable use of coastal oceans. She is the co-chair of HSRP.

Mr. Gary Thompson

Mr. Gary Thompson, Chief, North Carolina Geodetic Survey



Mr. Thompson has worked for the North Carolina Geodetic Survey (NCGS), which is the agency responsible for developing and maintaining North Carolina's official survey base, since 1977. As Section Chief since 1994, he has been continually modernizing the agency to keep up with advances and spatial data needs in the engineering, surveying, mapping, and scientific fields. He put the agency's modernized technologies, expertise, and quality control to the test while on the research team that conducted Light Detection and Ranging (LiDAR) aerial mapping research projects with NASA. He incorporated the results of those projects in to practice while on the program management team that completed the engineering and surveying project that produced a statewide set of Digital Flood Insurance Rate Maps (DRIRMs) for North Carolina. Mr. Thompson

promulgates outreach and technological transfer by conducting workshops with engineers and surveyors and by serving on three college advisory boards. During his career, he has participated in numerous state and national professional organizations and has managed/coordinated national and state conferences. He authored and co-authored numerous articles and issue papers on floodplain mapping and LiDAR technology. He is a former member of the National Geospatial Advisory Committee (NGAC) and currently serves on the Accreditation Board for Engineering and Technology (ABET) Applied and Natural Science Accreditation Commission and continues to conduct seminars throughout the state on a wide variety of topics important to the engineering and surveying professions.

Biographies HSRP Non-Voting Members

Capt. Andy Armstrong

Capt. (NOAA, Ret.) Andrew A. Armstrong III, Co-Director, NOAA/University of New Hampshire Joint Hydrographic Center



Andrew Armstrong is Co-Director of the NOAA/University of New Hampshire Joint Hydrographic Center where leads NOAA's role in the research, mapping, and educational programs of the Center. He is the Bathymetric Data Acquisition team leader for the U.S. Interagency Extended Continental Shelf Task Project where he has been responsible for mapping nearly 875,000 square nautical miles of the seafloor in the Arctic Ocean, the U.S. Pacific Islands, and along the U.S. Atlantic and Pacific margins. Andy joined the NOAA Commissioned Officer Corps in 1974, following 4 years of commissioned service in the U.S. Navy. He retired from the NOAA Corps in 2001, continuing with NOAA as Co-Director of the Joint Hydrographic Center in a civil service capacity. Throughout his NOAA career, he has specialized in hydrographic surveying and seafloor mapping. He has served on several NOAA hydrographic ships and field parties, conducting hydrographic and bathymetric surveys in Alaska and Hawaii, along the Pacific, Atlantic, Gulf of Mexico coasts, and in the Great Lakes. He served as commanding officer of *NOAA Ship Peirce* and *NOAA Ship Whiting*, and as chief of NOAA's Hydrographic Surveys Division. He has a B.S. in geology from Tulane University and an M.S. in technical management from The Johns Hopkins University.

Ms. Juliana P. Blackwell

Ms. Juliana P. Blackwell, Director, National Geodetic Survey, NOS



Ms. Juliana P. Blackwell is the Director of NOAA's National Geodetic Survey (NGS). As Director, she is responsible for the financial, administrative and programmatic performance of NGS, the lead federal agency for positioning activities in the Nation. She oversees the management and delivery of the National Spatial Reference System (NSRS), the nation's consistent coordinate system for latitude, longitude, height, shoreline, gravity measurements and shoreline information throughout the United States. The NSRS supports a wide range of important activities including mapping and charting, navigation, flood risk determination, transportation, land use and ecosystem management.

Ms. Blackwell serves as Chair of the Federal Geodetic Control Subcommittee of the Federal Geographic Data Committee, exercising government-wide leadership in the development and improvement of geodetic surveying specifications, methods, instrumentation, and data transfers. She is a member of NOAA's Hydrographic Services Review Panel, a federal advisory committee providing advice to the NOAA Administrator on matters related to hydrographic services. She represents NOAA on the interagency Alaska Mapping Executive Committee and the 3D Elevation Program Executive Forum. A graduate of Tufts University, Ms. Blackwell earned a Bachelor of Science degree in mathematics. She received a master's in business administration from the University of Maryland's Robert H. Smith School of Business.

Mr. Richard Edwing

Mr. Richard Edwing, Director, Center for Operational Oceanographic Products and Services, NOS



Richard Edwing is the director of [NOAA's Center for Operational Oceanographic Products and Services](#) (CO-OPS), the nation's authoritative source for accurate, reliable and timely water-level and current measurements. In his role, he oversees and continues to improve this 24-hour a day operation to provide mariners, coastal managers, and many other users with real-time data on ocean conditions along America's 95,000-mile coastline. Edwing's career with NOAA spans three decades with much of that time spent advancing NOAA's navigation services mission to provide the nation with up-to-date ocean, weather, mapping and positioning data and tools for safe transits to and from U.S. ports.

He started with NOAA in 1976 in the Marine Boundary Program, a partnership between NOAA and coastal states to establish tidal data such as base elevations in sensitive wetland areas vulnerable to urban growth. He later advanced through various positions in the field and at NOAA headquarters, including several years as division chief of the National Ocean Service's policy, planning and analysis division, where he shaped NOAA's priorities for ocean issues, as well as identified budget needs to advance and modernize ocean science for the twenty-first century. Graduating in 1976 from George Washington University, Edwing earned a Bachelor of Science degree in oceanography, and completed graduate level work in civil engineering at the University of Maryland. For two hundred years, CO-OPS and its predecessor agencies have provided the critical oceanographic data needed to protect life, property, and the marine environment. Today, the Center manages NOAA's Physical Oceanographic Real-Time System, the National Water Level Program, and National Current Observation Program—major national systems critical to keeping America's oceans, coasts, and Great Lakes safe, healthy and productive.

Dr. Larry Mayer

Dr. Larry Mayer, Director, Center for Coastal & Ocean Mapping, and Co-Director, Joint Hydrographic Center, University of New Hampshire

Larry Mayer is a Professor and the Director of the School of Marine Science and Ocean Engineering and The Center for Coastal and Ocean Mapping at the University of New Hampshire. He graduated



magna cum laude with an Honors degree in Geology from the University of Rhode Island in 1973 and received a Ph.D. from the Scripps Institution of Oceanography in Marine Geophysics in 1979. At Scripps, he worked with the Marine Physical Laboratory's Deep-Tow Geophysical package, applying this sophisticated acoustic sensor to problems of deep-sea mapping and the history of climate. After being selected as an astronaut candidate finalist for NASA's first class of mission specialists, Larry did a Post-Doc at the School of Oceanography at the University of Rhode Island and worked on the early development of the Chirp Sonar, problems of deep-sea sediment transport and paleoceanography. He was an Assistant Professor at Dalhousie University and moved to the University of New Brunswick to take up the NSERC Industrial Research Chair in Ocean Mapping. In 2000 he became the founding director of the Center for Coastal and

Ocean Mapping at the University of New Hampshire and the co-director of the NOAA/UNH Joint Hydrographic Center. Larry participated in more than 90 cruises (over 70 months at sea!) in 35 years, and has been chief or co-chief scientist of numerous expeditions, including two legs of the Ocean Drilling Program and eight mapping expeditions in the ice covered regions of the high Arctic. He served on, or chaired, many international panels and committees and a large number of publications on a variety of topics in marine geology and geophysics. He was a member of the President's Panel on Ocean Exploration, National Science Foundation's Advisory Committee for the Geosciences, and chaired a National Academy of Science Committee on national needs for coastal mapping and charting as well as the National Academies report on the impact of the Deepwater Horizon Spill on ecosystem services in the Gulf of Mexico. He was the co-chair of the NOAA's Ocean Exploration Advisory Working Group, the Vice-Chair of the Consortium of Ocean Leadership's Board of Trustees, and is the Chair of the National Academies of Science's Oceans Studies Board, a member of the State Dept.'s Extended Continental Shelf Task Force and the Navy's SCICEX Advisory Committee. In 2016 he was appointed by President Obama to the Arctic Research Commission. Larry's current research deals with sonar imaging and remote characterization of the seafloor as well as advanced applications of 3-D visualization to ocean mapping problems and applications of mapping to Law of the Sea issues, particularly in the Arctic.

Biography for the HSRP Designated Federal Officer

Rear Admiral Shepard M. Smith

Rear Admiral Shepard M. Smith, Designated Federal Officer, HSRP; Director, Office of Coast Survey; and acting Deputy Assistant Administrator, NOS, NOAA



Rear Admiral Shepard M. Smith became the director of the Office of Coast Survey (OCS) on August 26, 2016, and is serving as the acting deputy assistant administrator for NOS. Hallmarks of his career have been his leadership in the modernization of NOAA's charting systems and transformation of NOAA's hydrographic technologies. That leadership and experience are now be applied to expanding Coast Survey's data capabilities and supporting a data-enabled maritime economy, among other challenges.

Smith returns to Coast Survey as commanding officer of NOAA Ship *Thomas Jefferson*, on which he served three tours during his NOAA career. Smith served as the chief of Coast Survey's Marine Chart Division where he changed the nation's charting tradition by restructuring chart production and distribution. That modernization made U.S. navigational data more accessible to the public through a wider range of electronic formats, faster and more accurately. During ship assignments, he surveyed Alaska on NOAA Ship *Rainier*, was on the interagency response teams for the search and recovery of TWA flight 800, Egypt Air flight 990, the private plane piloted by John F. Kennedy, Jr., and commanded *Thomas Jefferson* during her six-week response to the Deepwater Horizon oil spill. Smith's other assignments with Coast Survey include chief of the Atlantic Hydrographic Branch, and deputy hydrographer. In NOAA, Smith served as the deputy director of the Office of Response and Restoration, on the staff of the USCG LANTAREA headquarters, and as a senior advisor to the assistant secretary of environmental observation and prediction. He was the NOAA representative to the Allied Maritime Sub Group, on the U.S. delegation to the International Hydrographic Organization's (IHO) Hydrographic Services and Standards Committee and was the chairman of the IHO Data Quality Working Group. *Thomas Jefferson*, under his command, was awarded a Commerce Gold Medal for heroism. He graduated with a bachelor of science in mechanical engineering from Cornell University in 1993. He has a master of science in ocean engineering in 2003, and completed the IHO Category "A" program, both at the University of New Hampshire.