**Expert Opinion Letter (Confidential)**

Analysis of Positional Requirements

Evaluator: Davide Piovesan, M.S.M.E., Ph.D.

Evaluator Info: Professor, Gannon University

**EDUCATION**

***Ph.D., Mechanical Measurements for Engineering***

University of Padua, Padua, Italy, 2004—2007

***Master of Science in Mechanical Engineering***

University of Padua, Padua, Italy, 1998—2003

**RESEARCH INTERESTS**

* System Identification for Biological, Naval, and space applications
* Solid mechanics
* Automation and robotics
* Design of Mechanism
* Assistive devices for physical rehabilitation
* Bio-mimetics
* Ethical Issues in Biomedical Engineering and Artificial Intelligence

**PROFESSIONAL EXPERIENCE**

***Associate Dean***

Gannon University, Erie, PA

*College of Engineering and Business, July 2022—Present*

***Director of the School of Engineering and Computing***

***Professor***

Gannon University, Erie, PA

***Department of Biomedical, Industrial and Systems Engineering (BISE), May 2021—Present***

***Department Chair***

Gannon University, Erie, PA

***Department of Biomedical, Industrial and Systems Engineering (BISE), July 2018—July 2022***

***Associate Professor***

Gannon University, Erie, PA

*Department of Biomedical, Industrial and Systems Engineering (BISE), July 2018—May 2021*

*Department of Mechanical Engineering, August 2017— June 2018*

***Director of Biomedical Engineering Program***

***Founder and President***

MP-Erie-Co. (pronounced empirico*),* Erie, PA

*Start-up research company housed in the Erie Technology Incubator*, January 2018—Present.

***Assistant Professor***

Gannon University, Erie, PA

*Department of Mechanical Engineering*, August 2013—2017.

***Director of Biomedical Engineering Program***

***Postdoctoral Fellow***

Rehabilitation Institute of Chicago - Northwestern University, Chicago, IL

*Sensory Motor Performance Program*, 2008—2013

Brandeis University, Waltham, MA

*Ashton Graybiel Spatial Orientation Laboratory*, 2007—2008

***Visiting Ph.D. candidate***

Brandeis University, Waltham, MA

*Ashton Graybiel Spatial Orientation Laboratory*, 2004—2006

***Consultant***

University of Padua, Italy

Modeled and analyzed vibration propagation in the finger-hand-arm system and aerospace mechanisms. Developed an instrumented set-up to control specific environmental variables for exobiology purposes.

*Center of Studies and Activities for Space (CISAS)*, 2006—2007

*Department of Astronomy,* 2005

*Center of Studies and Activities for Space (CISAS),* 2004

*Department of Mechanical Engineering*, 2003

**TEACHING EXPERIENCE**

***Associate Professor***

Gannon University, Erie, PA

*Department of Biomedical, Industrial and Systems Engineering (BISE)*, July 2018—Present

*Department of Mechanical Engineering*, August 2017— June 2018

***Assistant Professor***

Gannon University, Erie, PA

*Department of Mechanical Engineering/Biomedical Program*, 2013—2017

***Lecturer***

Northwestern University, Chicago, IL

*Department of Biomedical Engineering*, 2010—2013

The University of Illinois at Chicago, Chicago, IL

*Department of Biomedical Engineering*, 2012—2013

***Graduate Student Mentor***

Gannon University, Erie, PA 2018-2019

*Departments of Mechanical Engineering*

Gannon University, Erie, PA 2017

*Departments of Mechanical Engineering*

Gannon University, Erie, PA /San Luis Potosi, Mexico, 2017

*Departments of Mechanical Engineering* / *Mechatronics*

Gannon University, Erie, PA /University of Padua, Italy, 2016

*Departments of Mechanical Engineering* / *Computer Science*

Gannon University, Erie, PA /San Luis Potosi*,* Mexico, 2015

*Departments of Mechanical Engineering* / *Computer Science*

Northwestern University, Chicago, IL, 2010

*Department of Electrical Engineering*

University of Padua, Italy, 2004

*Department of Mechanical Engineering*

***Teaching Assistant***

University of Padua, Italy

*Department of Mechanical Engineering*, 2002—2004

**HONORS, AWARDS, and CERTIFICATIONS**

* Excellence in Undergraduate Advising Award for the College of Engineering and Business, *Gannon University,* 2016-2017
* Undergraduate Mentor Research Scholarship Award, *Gannon University,* 2015-2016
* ASB East Coast 2019 (ASB-EC) Poster Award (1st Place), 2019
* Northeast Bioengineering Conference (NEBEC) Poster Award (2nd Place), 2016
* North Western Pennsylvania (NWPA) Collegiate Innovation Showcase

*Bio-Conduit* (GRAND PRIZE $2,000)

Description: Development of an antibiotic intramedullary rod. Students: Felice J., Bates K., Hendrix W., Mahle T., April 2015

* North Western Pennsylvania (NWPA) Collegiate Innovation Showcase

*Assessment of Hygienic Movements* (2nd Runner-Up $500)

Description: Development of an inexpensive apparatus for the assessment of hygienic movements. Students: Papich J., Kennett C.J., April 2014

* Passed certification examination for the **Italian Board of Professional Engineers** in Structural, Mechanical, Environmental, Industrial, and Information Engineering, Padua, Italy, 2004
* Honorary fellow in Mechanical and Thermal Measurements, University of Padua, 2004—2007
* Full merit-based doctoral scholarship: Mechanical Measurements, Italian Ministry of Education (MURST), Rome, Italy, 2004-2007
* Full merit-based scholarship for graduate study, Italian Ministry of Education (MURST), Rome, Italy,1997-2003

***Member of***

* IEEE Institute of Electrical and Electronics Engineers (EMBS, RAS)
* ASME American Society of Mechanical Engineers
* ASEE American Society of Engineering Education
* BMES Biomedical Engineering Society

**Department of Homeland Security**

Citizenship and Immigration Services

My name is Dr. Davide Piovesan, M.S.M.E., Ph.D., and I am currently serving as Associate Dean and Professor at Gannon University in the Department of Biomedical, Industrial, and Systems Engineering. I hold a Ph.D. in Mechanical Measurements for Engineering from the University of Padua, Italy, and have over two decades of experience in fields such as solid mechanics, automation, robotics, and bio-mimetics. Over the years, I have conducted extensive research and taught in these areas, both in academic settings and in industrial applications, with particular emphasis on system identification for biological, naval, and space applications.

The purpose of this letter is to address the Request for Evidence (RFE) issued concerning the proffered position and its specialized nature. Based on my expertise in engineering systems and my experience with complex, multidisciplinary projects, I will demonstrate that the job duties outlined for this position require a high degree of specialized knowledge. Furthermore, I will explain how the educational qualifications for this role align with the industry standards for such specialized positions, and why the attainment of a degree in a specific field is necessary for the successful performance of the job.

I am providing this professional opinion letter based on my experience as a Professor and Associate Dean in the College of Engineering and Business at Gannon University in Erie, Pennsylvania. The College I lead has two Schools: the School of Engineering and Computing and the School of Business. Gannon is a nationally recognized University, and our laboratories are state-of-the-art in the nation. The School of Engineering and Computing houses programs in Biomedical, Electrical, Environmental, Mechanical, as well as Industrial and Robotics Engineering, both at the undergraduate and graduate levels. The Business school houses among other programs an MBA with several tracks in business administration and business analytics, as well as a program in Supply chain management and logistics.

My research is interdisciplinary; I have published more than 100 articles in Peer-reviewed Journals and conference proceedings. I have been cited in textbooks and am extensively involved in engineering presentations, research, and education. Among my achievements, I had the privilege to be chair of the Bio-Systems and Health Care (BSHC) and the Robotics Technical Committee, a part of the American Society of Mechanical Engineering (ASME) Dynamic Systems and Control Division. As an evaluator, I am responsible for reviewing academic and experiential qualifications to form part of a candidate’s credential evaluation report, providing a detailed analysis of the academic background and occupational experience that a person has received outside the United States.

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My opinions are limited to the information that I received and my education and professional experience and judgement.

**Overview of the Proffered Position**

The proffered position for Camila Lugo at Fugro USA Marine, Inc. is as a Project Geoscientist, where she will play a key role in conducting marine geophysical site investigation reporting. Her primary responsibilities include interpreting and assimilating complex geophysical, geotechnical, and well data, both onshore and offshore. Her role demands the creation of technical reports, as well as developing and applying Fugro’s specialized procedures, computer software, and services. Given the high level of responsibility in ensuring accurate data interpretation and report generation, the position involves working closely with geophysical and geotechnical data from various sources, utilizing specialized software and industry methodologies.

In terms of educational requirements, the position calls for a minimum of a bachelor’s degree in a field related to geophysics, oceanography, or engineering. However, Camila Lugo surpasses this requirement with a Master of Science in Geology from the University of Houston, where she gained advanced theoretical and practical expertise in geology, geophysical data analysis, and geotechnical integration. Her academic background is supplemented by practical experience, both in previous roles as a Staff Geoscientist at Fugro and in her position as an Operations Engineer at Global Energy & Production Company SAS, where she oversaw data analysis and project management.

Camila Lugo’s combination of academic qualifications and professional experience is critical for the specialized nature of her role as Project Geoscientist. The position requires complex knowledge in mapping geologic surfaces, identifying discontinuities, and processing data from diverse sources to inform regional and international projects. Her technical proficiency in using advanced software tools such as ArcGIS and her experience in both field and laboratory settings underscore the complexity and specialization inherent in this role. This makes her an ideal fit for the position, where advanced geological knowledge and hands-on expertise are essential for the successful execution of her duties​.

**Specialized Nature of the Duties**

The specialized nature of the duties associated with Camila Lugo’s position as Project Geoscientist at Fugro USA Marine, Inc. is multifaceted and requires a high level of technical skill and theoretical knowledge. The role demands much more than standard engineering or geological tasks and involves complex, interdisciplinary responsibilities that directly support the success of geophysical site investigations, both onshore and offshore. While the RFE compares the role to less specialized positions such as Mining and Geological Engineers, this comparison fails to capture the complexity and unique skill set required for marine geophysical investigation and the integration of multiple data sources to ensure precision in mapping and data analysis.

Camila Lugo’s duties as Project Geoscientist go beyond simple geological analysis. She is tasked with interpreting and assimilating a wide range of geophysical, geotechnical, and well data, including highly technical inputs from marine site investigations. This requires not only an understanding of geology but also a deep knowledge of how geophysical data are collected, processed, and integrated with other forms of data. For example, Lugo is responsible for using advanced computer software, such as ArcGIS, to accurately map geological surfaces, identify discontinuities, and present these findings in detailed, high-precision formats. The use of such software in marine geophysical investigations is a specialized skill that requires both formal education in geosciences and hands-on experience in data manipulation and interpretation.

One of the key aspects that makes her role particularly specialized is her work with geophysical and geotechnical data collected from offshore vessels. Camila Lugo is required to work on Fugro’s geophysical and geotechnical vessels for extended periods, typically between two to six weeks, where she collects and processes data from challenging marine environments. The ability to operate in such a setting requires specialized training in marine geology and geophysics, as well as a comprehensive understanding of how data collected under such conditions can be interpreted and used to inform broader geological conclusions. This kind of data collection and analysis, especially in a marine environment, is highly specialized and differs significantly from traditional land-based geological work, such as that done by Mining and Geological Engineers. Offshore operations require knowledge of maritime navigation, acoustics, and the specific methodologies used to collect data from beneath the ocean floor, which is far more technically demanding than terrestrial geology.

Furthermore, Camila Lugo’s responsibilities involve creating detailed technical reports based on her analysis of the data collected. These reports are critical for regional and international projects, meaning the accuracy and precision of her work have far-reaching consequences for the company’s success. The ability to synthesize and report on geophysical data, often involving the use of complex scientific models, is a clear indication of the specialized nature of her duties. The role is not just about collecting and interpreting data but also involves providing insights that are critical for project planning and decision-making. This requires not only a deep knowledge of geophysics and geology but also a capacity to communicate findings in a clear and scientifically sound manner. Such a combination of data analysis, report writing, and fieldwork further distinguishes her duties from less specialized roles.

The RFE’s suggestion that the position does not require a bachelor’s degree or higher overlooks the complexity and specificity of the skills required for the role. The duties Camila Lugo performs require specialized academic training that goes beyond the foundational knowledge of a general geology or engineering degree. Her role necessitates a solid academic grounding in geophysics, geology, and oceanography, fields that inherently involve advanced study and application of theoretical knowledge. A bachelor’s degree in a related field is the minimum educational requirement, and in Camila Lugo’s case, her Master of Science in Geology from the University of Houston underscores the necessity of advanced academic training. The coursework and research involved in earning her degree provided her with the theoretical frameworks necessary to understand and interpret the complex geological processes that occur in marine environments. Her education provided her with a broad foundation in geology, geophysics, and data interpretation, all of which are crucial for the performance of her duties as Project Geoscientist.

The highly technical nature of the tools and methodologies used in her role also requires formal training that only a structured educational environment can provide. For example, the ArcGIS software used for mapping and geospatial data management requires both practical and theoretical knowledge that is typically taught at the university level. Her ability to use this software effectively in her job demonstrates the need for specialized academic preparation. Additionally, her responsibility to assimilate geophysical, geotechnical, and well data into cohesive, scientifically accurate reports requires a high level of analytical skill that is directly tied to her educational background. The fact that she is required to supervise field and laboratory operations, ensuring compliance with technical standards and addressing any problems that arise, further emphasizes the specialized and managerial aspects of her role, which are not typically found in positions that do not require a degree.

In conclusion, the duties that Camila Lugo performs as a Project Geoscientist are highly specialized and require a unique combination of skills that extend well beyond the scope of less complex roles, such as Mining and Geological Engineers. Her role integrates advanced data collection and analysis, technical report writing, and offshore operations, all of which necessitate a high level of technical expertise and theoretical understanding. The advanced educational requirements and complex nature of her responsibilities affirm that a bachelor's degree, and in her case a master's degree, are essential to perform these duties effectively. The specialized knowledge and skills required to fulfill the role are deeply rooted in her formal academic training, making her position one that clearly necessitates advanced education and a specialized skill set.

**Relevance of Educational Background**

Camila Lugo’s academic background, as detailed in her petition, plays an essential role in her ability to perform the complex and specialized duties required of a Project Geoscientist at Fugro USA Marine, Inc. Her educational foundation in fields such as Geophysics, Oceanography, and Engineering is crucial, as these areas of study provide the theoretical and practical knowledge necessary to carry out the duties of her position. Each of these fields contributes uniquely to her ability to analyze, interpret, and integrate marine geophysical, geotechnical, and well data in the context of complex marine site investigations. Below, we will explore how these fields of study are directly connected to her job responsibilities and demonstrate the specialized knowledge they impart, which is critical for her role.

Geophysics is the cornerstone of Camila Lugo’s role as Project Geoscientist. As a scientific discipline, geophysics involves the study of the Earth’s physical properties and the methods used to measure and interpret data related to the Earth’s subsurface. In Camila Lugo’s position, geophysics is crucial because it allows her to interpret seismic, magnetic, gravity, and other geophysical data collected during marine geophysical site investigations. Her academic background in geophysics equips her with the theoretical understanding of subsurface processes, which she applies directly when analyzing geophysical data from marine environments.

For example, one of Camila Lugo’s primary responsibilities involves interpreting seismic data collected from Fugro’s offshore vessels. This task requires knowledge of wave propagation, seismic reflection, and refraction techniques, all of which are core concepts in geophysics. Her ability to apply these geophysical methodologies ensures that the data are accurately processed and interpreted to inform project outcomes. Additionally, her expertise in using advanced software, such as ArcGIS for geospatial data management, stems from her background in geophysics, where the integration of spatial data is a fundamental component of the field. The theories and principles she learned through her geophysics studies directly inform her ability to process, map, and present geological and geophysical data, which are essential duties in her current role.

Oceanography, the study of the physical and biological aspects of the ocean, is another critical field of study for Camila Lugo’s position as Project Geoscientist. Marine geophysical investigations are conducted in highly dynamic and often challenging marine environments. Understanding the physical properties of the ocean, such as ocean currents, tides, wave patterns, and the characteristics of the seabed, is essential for the successful collection and interpretation of geophysical data in these settings.

Camila Lugo’s background in oceanography allows her to consider and adjust for oceanographic factors when interpreting geophysical data. For example, when collecting and processing data from Fugro’s offshore vessels, she must account for the influence of water movement, sediment transport, and other marine environmental conditions that may affect data accuracy. The ability to anticipate and mitigate these factors stems from her academic knowledge of oceanographic processes. Furthermore, oceanography is essential for understanding the behavior of sediments and geological formations beneath the seabed. Marine geophysical site investigations often involve the study of sediment deposition, subsurface structures, and potential geohazards, all of which require specialized knowledge in oceanography. Without this foundation, it would be difficult to properly interpret the data necessary for the safe and efficient planning of offshore projects, such as pipeline installations, construction, and exploration.

The engineering component of Camila Lugo’s academic background is also highly relevant to her duties as a Project Geoscientist. Engineering, particularly in its application to geotechnical processes, provides the technical and practical framework for understanding how to apply physical principles in the context of problem-solving in marine environments. In her role, Camila Lugo is tasked with assimilating geotechnical data alongside geophysical and well data. This requires an understanding of the mechanical properties of soils and rocks, which are foundational concepts in geotechnical engineering.

For instance, Camila Lugo is responsible for evaluating geotechnical data related to the stability of seabed formations, which is essential for safe offshore construction and resource extraction. This aspect of her work draws directly on her engineering background, as she must apply her knowledge of the mechanical behavior of earth materials under varying pressure and environmental conditions. Moreover, engineering principles guide her ability to assess the structural integrity of subsea geological formations, ensuring that construction or extraction projects are based on sound scientific evaluations. In this regard, her engineering background provides her with the necessary skills to contribute to both the technical planning and execution of marine geophysical projects, further highlighting the complex and interdisciplinary nature of her role.

The specialized nature of Camila Lugo’s responsibilities as Project Geoscientist is a direct reflection of the complex academic knowledge she has gained through her studies in geophysics, oceanography, and engineering. These fields are not only relevant but essential to the performance of her duties, as they provide the theoretical and technical foundation required for advanced geophysical data analysis in marine environments. The integration of these disciplines equips Camila Lugo with the unique ability to interpret diverse data sets—geophysical, geotechnical, and well data—and to make informed recommendations that are critical to the success of Fugro’s regional and international projects.

For example, her ability to accurately map geological surfaces and identify potential geohazards is rooted in the principles of geophysics and oceanography. The methodologies she employs in seismic data interpretation and subsurface mapping require a deep understanding of the Earth’s physical properties, wave propagation, and the interactions between geological formations and marine environments. Moreover, her engineering background enables her to assess the mechanical properties of these formations, ensuring that her analyses are not only scientifically sound but also practically applicable to Fugro’s engineering projects. This combination of knowledge is what distinguishes her from professionals in less specialized roles, such as Mining and Geological Engineers, who may not require such an interdisciplinary and highly specialized skill set to perform their duties.

The RFE raised concerns regarding the explanation of how each field of study relates to the duties of the Project Geoscientist position. It is important to emphasize that each of these fields—geophysics, oceanography, and engineering—contributes uniquely to the specialized knowledge required for the role. While individually, these fields provide critical insights into specific aspects of marine geophysical investigation, it is the combination of these disciplines that allows Camila Lugo to perform the full scope of her duties effectively.

For instance, while geophysics provides the theoretical framework for interpreting subsurface data, oceanography adds the necessary context for understanding the marine environment in which these investigations are conducted. Engineering principles are then applied to ensure that the data can be used to inform safe and effective offshore operations, such as the installation of subsea infrastructure. The integration of these disciplines in Camila Lugo’s work demonstrates the specialized and complex nature of her role, and it is this interdisciplinary knowledge that necessitates an advanced degree. The ability to seamlessly integrate theories and methodologies from multiple scientific fields is not typically found in less specialized roles and requires the higher level of academic training that Camila Lugo has received.

In conclusion, Camila Lugo’s educational background in geophysics, oceanography, and engineering is not only relevant but essential to the specialized and complex duties she performs as Project Geoscientist. Each of these fields provides critical theoretical and practical knowledge that allows her to fulfill her responsibilities effectively, from data interpretation and analysis to offshore operations and report generation. The correlation between her academic background and the body of highly specialized knowledge required for the position underscores the necessity of an advanced degree, further affirming the specialized nature of the role and addressing the concerns raised in the RFE.

**Comparison to Industry Standards**

In examining the role of Project Geoscientist as proposed for Camila Lugo at Fugro USA Marine, Inc., it is crucial to contextualize her position within the broader industry standards for similar roles. Fugro is a global leader in providing integrated geotechnical, survey, subsea, and geosciences services, primarily catering to the energy and infrastructure sectors. The company’s work often involves offshore and marine projects, which require specialized geophysical and geotechnical investigations. Given the technical nature of the services provided by Fugro, the role of Project Geoscientist involves far more specialized responsibilities than comparable positions in less complex industries, such as those focusing on terrestrial or mining geosciences. In this context, Camila Lugo’s position is consistent with industry expectations for similarly complex roles, particularly regarding the educational and experiential qualifications required.

The role of a Geoscientist in the oil, gas, and marine industries, like the one Camila Lugo occupies, consistently requires advanced technical expertise, which is typically supported by a bachelor’s degree or higher in relevant fields such as Geophysics, Geology, Oceanography, or Engineering. This is evident when we look at job postings and requirements from similar organizations within the industry.

For example, Hilcorp Energy Company, a major player in oil and gas exploration, lists a Geoscientist role in Houston, TX, that involves highly specialized tasks such as geologic play description, correlation of well logs, and volumetric hydrocarbon calculations. The responsibilities of this role clearly overlap with those of Camila Lugo, particularly in terms of the interpretation and assimilation of well data, seismic data, and subsurface mapping. Importantly, Hilcorp’s job posting explicitly requires a Bachelor’s degree in Geology, with a Master’s degree preferred, reflecting the high level of academic training necessary for such specialized tasks. This aligns with Fugro’s requirement for a similar educational background for Camila Lugo’s role as Project Geoscientist. Moreover, the Hilcorp role demands eight years of experience, underscoring that even highly experienced professionals are expected to possess substantial academic and practical qualifications to perform similar duties[[1]](#footnote-1).

Likewise, Tetra Tech, another major organization in the field of geotechnical and environmental consulting, lists a Senior Level Geoscientist/Geologist and Project Manager position, which requires a Bachelor’s degree in Geology and over twenty years of experience for senior roles. Tetra Tech’s job description includes responsibilities such as conducting geotechnical evaluations, project management, and overseeing field operations, which are tasks similar to those performed by Camila Lugo in her role at Fugro. While the experience required is for a more senior-level position, the educational prerequisite mirrors the expectation for advanced, formal education that is consistent across geoscientist roles in this industry. The necessity for professional certification, such as being a registered geologist, also highlights the specialized nature of the role, which demands not only practical experience but also formal education and ongoing professional development[[2]](#footnote-2).

Another example from WSP, a global leader in environmental and geosciences consulting, highlights the requirements for a Geoscientist/Environmental Scientist role. The responsibilities of this position include the collection and analysis of geological and environmental data, report generation, and project oversight, which are tasks analogous to those of Camila Lugo. The job posting specifies a Bachelor’s degree in Geology or Environmental Science as a baseline requirement, with a preference for candidates holding a Master’s degree[[3]](#footnote-3). This demonstrates a clear industry standard that such roles require a specialized educational background to effectively interpret and analyze complex environmental and geophysical data, similar to the expectations placed upon Camila Lugo at Fugro.

The comparison to industry standards highlights that geoscientist roles of this nature demand specialized academic training, typically a bachelor’s degree or higher, to handle the complexities of interpreting geological and geophysical data, managing field operations, and ensuring compliance with industry regulations. These roles, as demonstrated by the examples above, require candidates to possess a deep understanding of earth sciences, geophysical principles, and environmental factors, all of which are grounded in formal academic education.

Camila Lugo’s advanced education, with a Master of Science in Geology from the University of Houston, positions her well within the industry’s expectations for educational qualifications. The specialized tasks she performs, such as interpreting seismic and well data, assimilating geotechnical information, and producing high-precision geological maps using advanced software like ArcGIS, require a deep understanding of complex geophysical and geological processes. These are not tasks that can be performed adequately without the theoretical and technical training provided by a degree in a field such as Geophysics or Geology.

The RFE raised concerns about the necessity of a degree for this position. However, as demonstrated by the industry standards discussed above, roles that involve specialized tasks similar to those performed by Camila Lugo consistently require candidates to hold at least a bachelor’s degree. In her case, the requirement is even more pronounced, as her work with Fugro involves integrating data from multiple sources in challenging marine environments, a task that demands not only academic knowledge but also the ability to apply complex theories in practical settings.

Fugro USA Marine, Inc. operates in the marine geosciences sector, which is inherently more complex than terrestrial geosciences. The marine environment introduces additional variables, such as the behavior of water currents, seabed characteristics, and the logistical challenges of offshore data collection. These complexities are compounded when interpreting geophysical data collected from beneath the ocean floor, which requires advanced understanding of both geological and marine processes. The roles performed by professionals at Fugro, such as Camila Lugo, therefore involve specialized tasks that go beyond the scope of less complex geoscientific roles, such as those focused on mining or land-based geological evaluations.

This distinction further underscores the necessity for highly specialized educational backgrounds in fields like Geophysics, Oceanography, and Engineering. Without such a foundation, professionals would lack the theoretical and technical skills needed to interpret the vast amounts of data collected from offshore surveys and ensure the success of regional and international projects. The role of Project Geoscientist at Fugro involves not only data interpretation but also the creation of technical reports that guide decision-making at the highest levels, contributing to the safety and efficiency of critical operations.

Therefore, the role of Project Geoscientist as performed by Camila Lugo at Fugro USA Marine, Inc. aligns with industry standards that require a high level of specialized knowledge, supported by a bachelor’s degree or higher. Comparisons to similar roles at companies like Hilcorp Energy Company, Tetra Tech, and WSP reveal that advanced education is not only a common requirement but also essential for the successful execution of the duties involved. The complexities of the marine geophysical work undertaken by Fugro further distinguish this role from less specialized positions, reinforcing the need for a degree and confirming that Camila Lugo’s educational background is both relevant and necessary to perform her duties effectively.

**Explanation of Products or Services**

Fugro USA Marine, Inc. operates within the highly specialized field of marine geotechnical, geophysical, and geoscience services, serving critical sectors such as energy, infrastructure, and natural resource exploration. The company’s portfolio of products and services is distinct in the industry, offering integrated solutions that involve complex data collection, interpretation, and technical reporting from some of the most challenging environments on Earth—underwater and offshore. The services Fugro provides require not only cutting-edge technology but also highly skilled professionals with the expertise to interpret data accurately and ensure project success. Camila Lugo’s position as a Project Geoscientist at Fugro is directly tied to the technical and specialized nature of these services, necessitating her advanced education and skills to meet the demands of the role.

Fugro is a leader in providing marine geoscience services that differ significantly from land-based or less specialized geoscience work. The company’s core offerings include geotechnical site investigations, geophysical mapping, and subsea infrastructure planning. These services are used to support offshore drilling, pipeline installations, renewable energy projects, and other large-scale infrastructure developments, where understanding the seabed and subsurface conditions is critical to safety, project feasibility, and regulatory compliance.

One of the key differentiators for Fugro is its ability to perform complex marine geophysical surveys using cutting-edge technology, such as sonar systems, acoustic positioning systems, and subsea sensors. These tools allow Fugro to capture high-resolution data from beneath the ocean floor, providing clients with detailed insights into subsurface conditions that are crucial for making informed decisions on offshore infrastructure projects. Unlike competitors who may focus on terrestrial or simpler geological surveys, Fugro’s services require a deep understanding of how these technologies interact with the marine environment. This capability sets Fugro apart from competitors in the broader geosciences market, as their work requires a level of technical sophistication that only highly specialized professionals, like Camila Lugo, can provide.

The technical aspects of Fugro’s marine geophysical surveys are among the most specialized in the industry. These surveys involve the collection of seismic, bathymetric, and geotechnical data, all of which require advanced knowledge of geophysics, oceanography, and engineering to interpret correctly. For instance, Fugro’s geophysical services include high-resolution seismic reflection surveys, which provide detailed imagery of the subsurface layers. These surveys are crucial for identifying geological features such as faults, sediment layers, and other potential geohazards that could affect offshore drilling or construction. Interpreting these complex datasets requires not only technical skill but also the ability to integrate information from various sources, such as well logs, sonar readings, and geotechnical samples. This is where the specialized nature of Camila Lugo’s role becomes evident.

Camila Lugo’s advanced education in Geology and experience with marine geophysical data make her uniquely qualified to handle the technical demands of Fugro’s services. The ability to interpret seismic and geotechnical data is not something that can be learned on the job without a strong educational foundation in earth sciences and geophysics. Furthermore, her use of specialized software like ArcGIS to map and manage geospatial data is a clear example of the advanced technical skills required for this role. Her tasks involve integrating data from multiple streams—geophysical, geotechnical, and well data—and ensuring that the final reports are both accurate and actionable for Fugro’s clients. This process is far more complex than standard geological or environmental assessments performed by competitors who may focus on less specialized areas.

Fugro’s services require a level of precision and technical expertise that demands advanced education and training. The company’s geotechnical site investigations, for example, involve collecting and analyzing samples from the seabed to assess its suitability for construction or drilling. The data gathered must be processed and interpreted by individuals with a deep understanding of soil mechanics, fluid dynamics, and the physical properties of marine sediments. Camila Lugo’s role involves not only the collection of this data but also its analysis and integration into comprehensive technical reports that guide project planning and execution. Her knowledge of geophysics and geology enables her to assess subsurface conditions accurately, helping Fugro’s clients avoid costly mistakes and ensuring that projects are carried out safely and efficiently. In addition, Fugro’s work often involves international projects where the geological conditions can vary significantly from one region to another. This requires professionals like Camila Lugo to have a broad and in-depth understanding of geological and oceanographic processes, allowing them to adapt to different environments and interpret data in a way that is relevant to each specific project. The complexity of these tasks, combined with the technical nature of the equipment and data processing involved, makes it clear that only individuals with specialized education and experience can perform the role effectively.

Fugro’s ability to offer these specialized services not only differentiates it from competitors but also elevates the expectations for the qualifications of its employees. In the broader geosciences industry, companies that focus on less specialized work, such as terrestrial mining or environmental assessments, may not require their geoscientists to possess the same level of advanced education. However, the marine environment, with its unique challenges, necessitates that Fugro’s geoscientists hold degrees in fields like Geophysics, Oceanography, and Engineering. Competitors offering similar high-end geophysical and geotechnical services, such as Hilcorp Energy and Tetra Tech, also require geoscientists to hold bachelor’s or higher degrees in relevant fields. These companies, like Fugro, understand that the specialized knowledge required to interpret complex marine geophysical data can only be gained through formal education and professional experience.

Camila Lugo’s role, which involves managing and interpreting geophysical data collected from offshore sites, is critical to Fugro’s ability to maintain its competitive edge. Her specialized education enables her to process and analyze the data efficiently, ensuring that Fugro’s reports meet the highest standards of accuracy and reliability. This, in turn, allows Fugro to offer clients unparalleled insights into subsurface conditions, setting the company apart in a crowded and competitive market.

**Complexity and Uniqueness of the Role**

The role of a Project Geoscientist at Fugro USA Marine, Inc. is not only highly specialized but also complex and unique when compared to industry standards, particularly in contrast with the more conventional duties associated with Mining and Geological Engineers. The responsibilities inherent in Camila Lugo’s role involve tackling challenges specific to the offshore and marine geophysical sector, which requires a unique blend of advanced technical knowledge, problem-solving skills, and interdisciplinary expertise that surpass the typical scope of geoscientific roles found in terrestrial contexts.

The offshore marine environment introduces numerous variables and complexities that set this role apart from land-based geological positions. Unlike Mining and Geological Engineers, who typically focus on site investigation and resource extraction in predictable terrestrial conditions, Project Geoscientists like Camila Lugo must operate in unpredictable and challenging marine environments, where data collection and interpretation are significantly more complex.

One of the key responsibilities of a Project Geoscientist at Fugro is the collection, analysis, and integration of multiple geophysical data streams—seismic, sonar, and geotechnical data—obtained from highly specialized marine technology such as Autonomous Underwater Vehicles (AUVs), Remotely Operated Vehicles (ROVs), and advanced seismic systems. The remote and dynamic nature of offshore environments demands precise execution, as external factors such as water pressure, currents, and the seabed’s constantly changing conditions can impact the accuracy of data collection. The necessity to adjust for these variables, while ensuring that data remain reliable, adds a layer of complexity that is far greater than what is encountered by land-based geological engineers.

Furthermore, the use of cutting-edge technologies such as seismic reflection and sonar imaging systems allows Project Geoscientists to generate high-resolution subsurface maps of the ocean floor. These technologies are crucial for identifying geological features such as faults, hydrocarbon reservoirs, and potential geohazards—responsibilities that require not only technical acumen but also an advanced understanding of subsurface geophysics. In the marine context, geophysical data often need to be processed in real time to guide critical project decisions, such as determining the best locations for offshore drilling or subsea infrastructure installation. The ability to integrate data from multiple disciplines and provide real-time recommendations based on this analysis demands a level of expertise that can only be gained through advanced education and specialized training.

The role of Project Geoscientist at Fugro is unique in that it requires advanced problem-solving skills, particularly when dealing with the highly variable and often harsh conditions of offshore marine environments. For instance, ocean currents, wave activity, and sediment transport can obscure or distort geophysical readings, making it difficult to accurately map subsurface features. Camila Lugo must employ advanced technical knowledge in geophysics and oceanography to adjust for these challenges, interpreting data in ways that allow for precise geological modeling.

Another unique aspect of the role is the integration of geotechnical data, such as soil samples and rock core data, which are crucial for assessing the mechanical properties of the seabed and its suitability for construction or resource extraction. Unlike land-based geological engineers who can rely on direct observations and surface-based testing, Project Geoscientists must work with indirect data collected from remote sensors and geophysical instruments deployed in deep water. The combination of geophysical and geotechnical data is essential for creating accurate geological models of the subsurface, but it requires advanced technical skills to reconcile discrepancies between datasets. The ability to perform this complex data integration makes the role of a Project Geoscientist more challenging than that of a typical Mining or Geological Engineer, whose focus is more limited to a specific type of data or environment.

The RFE suggests that the duties of a Project Geoscientist do not appear to be more complex than those of a Mining or Geological Engineer. However, the realities of marine geophysical surveys prove otherwise. The complexity of Camila Lugo’s role surpasses industry expectations in several ways. For example, while Mining and Geological Engineers often focus on resource extraction in relatively stable environments, Camila Lugo must contend with the constantly shifting seabed, the effects of water depth and pressure, and the necessity of conducting operations in remote locations, far from shore-based support.

Additionally, the role of Project Geoscientist requires advanced skills in using and maintaining specialized offshore equipment. This includes knowledge of underwater sonar systems, remote sensing technologies, and seismic reflection systems, all of which are not typically used by Mining and Geological Engineers. The need to ensure the accuracy and functionality of this equipment in high-pressure underwater environments introduces a level of complexity that does not exist in terrestrial geology. For example, marine geophysical surveys often use autonomous underwater vehicles to map the seabed. These vehicles operate at depths of several thousand meters, where pressure, temperature, and other environmental factors can significantly impact the performance of both the vehicle and the data it collects. Ensuring that this technology functions correctly and provides accurate data is a key responsibility that requires advanced technical expertise.

Another significant difference lies in the integration of environmental compliance with technical responsibilities. Project Geoscientists must ensure that their data collection and interpretation adhere to strict environmental regulations designed to protect marine ecosystems. These regulations are often more stringent than those applied to land-based operations, due to the sensitive nature of marine environments. The ability to navigate these complex regulatory frameworks, while also managing the technical aspects of data collection and interpretation, sets the Project Geoscientist role apart from simpler geological or mining positions.

In many ways, the duties of a Project Geoscientist surpass those typically expected in geoscience or engineering roles, both in complexity and scope. For instance, the requirement to integrate multiple data sources from different disciplines (seismic, geotechnical, environmental) into a single cohesive geological model demands a level of interdisciplinary expertise that is rarely found in more traditional roles, such as Mining or Geological Engineers. This interdisciplinary focus, combined with the need to operate in complex and hazardous offshore environments, places the Project Geoscientist role at Fugro at a level of specialization and complexity that goes far beyond typical industry roles. Moreover, the scope of the role is expanded by the global nature of Fugro’s operations. Camila Lugo must work on projects that span different geographic regions, each with unique geological and environmental characteristics. This requires her to apply her knowledge to diverse and changing contexts, making real-time adjustments to her analysis based on the specific conditions of each project. This global focus, combined with the technical challenges of offshore data collection and integration, makes her role far more complex and specialized than those typically encountered in land-based geoscience positions.

The role of Project Geoscientist at Fugro USA Marine, Inc. is not only specialized but also exceptionally complex and unique within the geosciences industry. The challenges associated with offshore data collection, the use of advanced marine technologies, the integration of multiple data streams, and the stringent environmental and safety regulations that govern marine operations all contribute to the complexity of the role. These factors distinguish it from more conventional roles in mining or terrestrial geology, which are far less demanding in terms of both technical expertise and interdisciplinary knowledge. Camila Lugo’s advanced education and specialized skills are essential for navigating these complexities, making her role vital to the success of Fugro’s regional and international projects.

**Conclusions**

In conclusion, I firmly believe that Camila Lugo’s qualifications are perfectly suited to the specialized and complex nature of the Project Geoscientist position at Fugro USA Marine, Inc. Her Master of Science degree in Geology from the University of Houston, coupled with her practical experience in marine geophysical and geotechnical data interpretation, has equipped her with the advanced technical expertise and interdisciplinary skills necessary for this demanding role. The tasks she undertakes—interpreting seismic, sonar, and geotechnical data, integrating diverse data sets, and utilizing advanced marine exploration technologies—are highly specialized. These responsibilities go well beyond the typical duties of other geoscientific roles, such as those of Mining and Geological Engineers, which do not encounter the same level of technical complexity or environmental challenges.

I can confidently state that this position requires a specialized degree in fields such as Geology, Geophysics, or Oceanography, as the depth of knowledge and problem-solving abilities needed to manage offshore geophysical surveys and to accurately integrate and interpret multiple data streams cannot be gained without formal academic training. This role is essential to Fugro’s operations, ensuring the success of both regional and international projects, where accurate geological data is critical for resource exploration, infrastructure development, and compliance with environmental standards.

Based on my analysis of Camila Lugo’s qualifications and the complexity of the role, I am certain that the Project Geoscientist position qualifies as a specialty occupation. The evidence and explanations I have provided here, along with the supporting documentation, address all the concerns raised in the RFE. I am confident that this demonstrates the specialized and complex nature of the role and makes it clear that Camila Lugo’s advanced education and professional experience make her the ideal candidate for this position.

The USCIS specifically states that any “position must meet one of the following criteria to qualify as a Specialty Occupation: *(1) a bachelor’s or higher degree or its equivalent is normally the minimum entry requirement for the position; (2) the degree requirement is common to the industry in parallel positions among similar organizations or, in the alternative, the position is so complex or unique that it can be performed only by an individual with a degree; (3) the employer normally requires a degree or its equivalent for the position; or (4) the nature of the specific duties is so specialized and complex that the knowledge required to perform the duties is usually associated with attainment of a bachelor’s or higher degree…”* See 8 CFR 214.2(h)(4)(iii)(A).

It is my opinion that this Software Developer position meets all the requirements and qualifies as a USCIS Specialty Occupation, and that the beneficiary, Mr. Kamil Lukasz Zaleski, is fittingly qualified for the position.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

A close-up of some words

Description automatically generated

Davide Piovesan

Professor and Associate Dean

School of Engineering and Computing

Gannon University

October 7, 2024

References

* Geoscientist / Environmental Scientist WSP. https://www.indeed.com/viewjob?jk=a027f792907c5e0f&tk=1i9jjmvdvijsl800&from=serp&vjs=3
* Senior Level Geoscientist/Geologist and Project Manager Tetra Tech. https://www.indeed.com/viewjob?jk=db56e42c55eeb999&tk=1i9jjn1njivbu84m&from=serp&vjs=3
* Geoscientist. Hilcorp Energy Company. https://www.indeed.com/viewjob?jk=3990668cc7bab8b9&tk=1i9jjn5rogorh8a3&from=serp&vjs=3
* Introduction to Offshore Geophysical & Geotechnical Site Investigation .... https://sut.org/wp-content/uploads/2021/05/Introduction-to-offshore-geophysical-geotechnical-site-investigation-new-format.pdf.
* Frontiers | An Overview of Seabed Mining Including the Current State of .... https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2017.00418/full.
* Deep seabed mining: Frontiers in engineering geology and environment .... https://link.springer.com/article/10.1007/s40789-023-00580-x.
* HIGH-RESOLUTION OFFSHORE 3D SEISMIC GEOPHYSICAL STUDIES OF ... - Geometrics. https://geometrics.com/wp-content/uploads/2018/10/SAGEEP-13.pdf.
* https://doi.org/10.3389/fmars.2017.00418.
* Geological and Geophysical Integrated Interpretation and Modelling .... https://www.tandfonline.com/doi/pdf/10.1071/ASEG2016ab262.
* Geological engineering - Wikipedia. https://en.wikipedia.org/wiki/Geological\_engineering.
* Interdisciplinary Methods and Applications in Geophysics (IMAGe). https://www.usgs.gov/centers/gggsc/science/interdisciplinary-methods-and-applications-geophysics-image.
* Integrated framework for geological modeling: integration of data .... https://link.springer.com/article/10.1007/s10064-024-03794-8.
* Integrated use of well and geophysical data for constructing 3D .... https://link.springer.com/article/10.1007/s12665-021-09461-5.
* Geological Engineer Overview - The Geological Society of America. https://careers.geosociety.org/career/geological-engineer.
* What is Geological Engineering? - Michigan Tech. https://www.mtu.edu/geo/what-is-geological/.
* Introduction to Offshore Geophysical & Geotechnical Site Investigation .... https://sut.org/wp-content/uploads/2021/05/Introduction-to-offshore-geophysical-geotechnical-site-investigation-new-format.pdf.
* GEOTECHNICAL & GEOPHYSICAL INVESTIGATIONS FOR OFFSHORE AND NEARSHORE .... https://repository.oceanbestpractices.org/bitstream/handle/11329/2484/Investigations%20for%20developments.pdf?sequence=1.
* Recent advances in offshore geotechnics for deep water oil and gas .... https://www.academia.edu/80712598/Recent\_advances\_in\_offshore\_geotechnics\_for\_deep\_water\_oil\_and\_gas\_developments.
* Geological and Geophysical Integrated Interpretation and Modelling .... https://www.tandfonline.com/doi/pdf/10.1071/ASEG2016ab262.
* Geotechnics | Special Issue : Offshore Geotechnical Engineering ... - MDPI. https://www.mdpi.com/journal/geotechnics/special\_issues/offshore\_geotechnical\_engineering.
* Recent advances in offshore geotechnics for deep water oil and gas .... https://eprints.soton.ac.uk/414560/1/2011\_Ocean\_Engineering\_38\_818\_834\_Randolph\_et\_al.pdf.
* Integrated framework for geological modeling: integration of data .... https://link.springer.com/article/10.1007/s10064-024-03794-8.
* Interdisciplinary Methods and Applications in Geophysics (IMAGe). https://www.usgs.gov/centers/gggsc/science/interdisciplinary-methods-and-applications-geophysics-image.
* Integrated use of well and geophysical data for constructing 3D .... https://link.springer.com/article/10.1007/s12665-021-09461-5.
* Geological engineering - Wikipedia. https://en.wikipedia.org/wiki/Geological\_engineering.
* Geological Engineer Overview - The Geological Society of America. https://careers.geosociety.org/career/geological-engineer.
* What is Geological Engineering? - Michigan Tech. https://www.mtu.edu/geo/what-is-geological/.
* ENVIRONMENTAL HEALTH AND SAFETY GUIDELINES FOR OFFSHORE OIL AND GAS .... https://www.ifc.org/content/dam/ifc/doc/mgrt/final-jun-2015-offshore-oil-and-gas-ehs-guideline.pdf.
* Offshore oil and gas development in remote harsh environments .... https://link.springer.com/article/10.1007/s42797-022-00057-1.
* U.S. Regulation of Oil and Gas Operations. https://www.americangeosciences.org/geoscience-currents/us-regulation-oil-and-gas-operations.
* Mining Engineer Job Description - The Geological Society of America. https://careers.geosociety.org/career/mining-engineer/job-descriptions.
* Marine Geophysicist Job Description [Updated for 2024]. https://interviewguy.com/marine-geophysicist-job-description/.
* Mining and Geological Engineers - U.S. Bureau of Labor Statistics. https://www.bls.gov/ooh/architecture-and-engineering/mining-and-geological-engineers.htm.
* Mining or Geological Engineer - Truity. https://www.truity.com/career-profile/mining-or-geological-engineer.
* Mining and Geological Engineers - College Board. https://bigfuture.collegeboard.org/careers/mining-and-geological-engineer-including-mining-safety-engineer.
* Marine Geoscientist Job Description [Updated for 2024]. https://interviewguy.com/marine-geoscientist-job-description/.
* Marine Geologist Job Description (Updated 2023 With Examples) | GSA. https://careers.geosociety.org/career/marine-geologist/job-descriptions.
* Geoscientist Job Description (Updated 2023 With Examples) | GSA. https://careers.geosociety.org/career/geoscientist/job-descriptions.
* Geoscientist Career Profile | Job Description, Salary, and Growth - Truity. https://www.truity.com/career-profile/geoscientist.

1. https://www.indeed.com/viewjob?jk=3990668cc7bab8b9&tk=1i9jjn5rogorh8a3&from=serp&vjs=3 [↑](#footnote-ref-1)
2. https://www.indeed.com/viewjob?jk=db56e42c55eeb999&tk=1i9jjn1njivbu84m&from=serp&vjs=3 [↑](#footnote-ref-2)
3. https://www.indeed.com/viewjob?jk=a027f792907c5e0f&tk=1i9jjmvdvijsl800&from=serp&vjs=3 [↑](#footnote-ref-3)