PEA Job Description

1. Position Identification

<table>
<thead>
<tr>
<th>Position Number</th>
<th>993072, 993342, 993783, 993851</th>
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<tbody>
<tr>
<td>Position Title</td>
<td>Project Engineer</td>
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<tr>
<td>Department</td>
<td>Ocean Networks Canada</td>
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<tr>
<td>Reports to</td>
<td>Field Services Manager (FSM) or Testing and Development Manager (TDM)</td>
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<tr>
<td>Number of Direct/Indirect Reports</td>
<td>Direct 0, Indirect 2</td>
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<tr>
<td>Classification Level</td>
<td>SG13</td>
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2. Position Summary

Ocean Networks Canada (ONC) is a world-leading organization supporting ocean discovery and technological innovation. ONC is as a not-for-profit society that operates and manages innovative cabled observatories on behalf of the University of Victoria that supply continuous power and Internet connectivity to various scientific instruments located in coastal, deep-ocean, and Arctic environments. ONC’s cable arrays host hundreds of sensors distributed in, on and above the seabed along with mobile and land based assets strategically located, instruments that address key scientific and policy issues (subsea earthquakes and tsunamis, ocean acidification, marine biodiversity, etc.) within a wide range of environments.

ONC’s Observatory Operations’ division is mandated to provide a reliable and relevant digital and coastal and sub-sea infrastructure that facilitates the goals of the observatory user communities. As a department within Observatory Operations, Marine Operations supports this mandate through the installation, maintenance and repair of the cabled arrays, mobile systems and land-based assets that comprise the coastal sub-sea infrastructure. In this regard, Marine Operations utilizes a team-based, client-focused approach that promotes a safe work environment and fosters an environment of mutual respect, cooperation and support. Together the Field Services, Testing & Development and Operations Support units within Marine Operations work to efficiently, effectively and safely fulfill their core purpose. The Marine Technology Centre (MTC) in Sidney serves as the department’s base of operations.

The Testing and Development unit designs, develops and maintains instruments and equipment, tests and qualifies both prior to deployment, and supports the planning and execution of field operations related to the observatories maintenance. The Field Services unit is primarily responsible for preparing for and executing field service operations related to the day-to-day workings of the cabled observatories and other mobile and land based assets. Both units' responsibilities include ship based activities that occur multiple times a year for up to four weeks duration, as well as day and multi day trips to service land and marine systems.

The Project Engineer provides technical expertise, consulting on and leading projects designing, planning and implementing new systems and equipment that work reliably and meet the needs of the science user community. The Project Engineer also contributes to the maintenance of the wet plant and existing systems that make up the ONC observatories. The Project Engineer reports to either the Testing & Development Manager (TDM) or the Field Services Manager (FSM). However, the Project Engineer may receive systems-related guidance or direction from either the TDM or FSM.

This position is expected to maintain Professional Engineering standards and certifications in forklift and crane operation, standard first aid or marine basic first aid, and a Transport Canada approved marine safety course.

This position, as with all Marine Operations positions, will on a rotating basis serve as the
Marine Operations Safety Coordinator whose role it is to coordinate internal tasks required to ensure safety equipment, training and records are in place to meet Marine Operations workplace safety requirements. The Safety Coordinator sits on the ONC Joint Local Safety Committee.

### 3. Key Responsibilities and Expectations

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<tr>
<th>Key Responsibilities</th>
<th>% of time</th>
<th>Expectations:</th>
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</table>
| **Project Management**       | 60%       | • Delivers reliable, cost effective ocean-monitoring systems and equipment that meet the requirements of the science community and are compatible with the observatories.  
• Establishes relationships and with Manager's approval develops, on behalf of ONC, Agreements and Memoranda of Understanding with agencies, facilities and service providers for the right to install systems on premises, use managed resources, and gain access to required services and equipment.  
• Manages science user and key stakeholder (e.g. commercial partners, US and Canadian Navy) expectations and interests to ensure delivery of systems that meet their goals.  
• Develops specifications for systems and equipment based on feedback from the science community.  
• Assesses and selects proponents and suppliers for systems and equipment.  
• Develops documentation for systems such as standard operating procedures, user manuals, wiring diagrams and system diagrams for Marine Operations staff.  
• Performs site visits and works directly with contractors to successfully install and maintain ONC field installations with FSM's oversight.  
• Supervises external contractors working on ONC installations, including suppliers, engineers, technologists, and electrical and general contractors. |
| **Engineering Design**       | 15%       | • Designs components and systems in area of expertise, including programming, hardware and software components based on established internal and external requirements.  
• Innovates to find solutions that meet the needs of the science community and their objectives.  
• Sources materials and off the shelf components as part of the design process.  
• Participates in procurement activities related to construction of designed components, in collaboration with the Operations Support Manager (OSM).  
• Interfaces with other disciplines such as machinists and Engineers in the design and manufacture of components and systems.  
• Participates in Design Reviews and evaluation testing for both internally and externally developed components and systems.  
• Modifies equipment for deployment and ROV interaction. |
Operations & Maintenance  25%

- Works with ONC Systems and Digital Infrastructure staff to develop, test and implement software for specialized instruments etc.
- Participates in field activities under the supervision of the FSM, including deployment and recovery of subsea equipment and installation and maintenance (hardware and software) of mobile and land based assets.
- Provides advice and direction to ONC Systems and Digital Infrastructure staff as well as external partners regarding instrument performance, instrument data quality and data acquisition via JIRA ticketing system.
- Provides technical advice to Marine Equipment Technicians and Technologists.
- Develops deployment and recovery plans to safely and efficiently deploy and recover equipment.
- Responsible for the installation and maintenance of various shipboard systems, as directed by the Expedition Leader and/or the FSM.
- Provides technical assessments, reports and recommendations to ONC management on operational matters.
- Consults with scientists, ship and ROV crew and ONC staff regarding instrument requirements, testing and installation parameters.
- Supervises external contractors associated with operational fieldwork, including technologists, electrical and general contractors, marine operators, and Remotely Operated Vehicle service providers.
- Test and qualify scientific instruments, equipment etc. to be integrated into ONC observatories according to established standards and protocols.
- At MTC, and in the field, makes decisions with safety as the top priority.
- Ensure the laboratory and testing facilities at MTC and the shore stations are maintained at a high operational standard and are a clean, healthy and safe working environment.

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4. Classification Factors:

(a) Independence of action, authority and decision making:

The Project Engineer exercises a high degree of independence when executing job responsibilities and making decisions. The Project Engineer has the authority to pursue concepts, and apply resources in order to develop reliable, efficient cost effective installations. Key decisions are made in consultation with relevant stakeholders and the supervising manager. In the field and at-sea, decisions related to operations are typically time sensitive and require a good understanding of the trade-offs and cost implications. Consultation with the supervising manager is required when significant deviations from established installation and operations plans are expected.

The types of decisions made by the Project Engineer include:
- The transference of science requirements and objectives into prototype designs
- The selection of a contractor for the development of a new system
- The selection of suppliers for components associated with both operations and new systems
- In the field and at-sea, contractors and their execution of deliverables

Computer programming is of a type and level for which informed guidance is unavailable within the organization. Consultation with peers outside ONC is frequently necessary.

When carrying out their responsibilities the Project Engineer is expected to work to professional engineering standards, comply with applicable ONC and UVic policies, protocols and procedures, as well as uphold all applicable safety regulations, policies and procedures.

(b) Accountability – scope and impact:
The Project Engineer:
- Contributes to the design and manufacture of effective, reliable systems, equipment, components, platforms and structures, underwater enclosures etc.
- Is accountable for successfully planning and managing engineering projects that meet the functional requirements of the scientific users within established technical, schedule and budget constraints
- Acts as an agent of the organization by being involved in permitting processes and interfacing with Regulatory Agencies.
- When at sea, under the direction of the FSM and/or the Expedition Leader, undertakes the execution of specified tasks, which could include directing deck operations, determining mechanical refit solutions and developing new approaches to the deployment and recovery of systems based on complicating circumstances.

The decisions made by the Project Engineer directly affect the success of the observatories, and through association the reputation of ONC, and UVic.

(c) Supervision given and received:
The Engineer may provide guidance and direction to co-op or work study students. The Project Engineer may supervise students and Marine Operations staff in the field when Expedition Lead. Formal supervision of the Project Engineer will be given by the FSM or the TDM, depending on which unit the Project Engineer is assigned to. However, systems-related direction or guidance may be provided by either the FSM or the TDM. Where appropriate, he/she will train and oversee other ONC employees with regard to the specific hazards presented by instruments and/or other equipment.

(d) Budget, Financial & Material resources:
The Project Engineer will communicate directly with suppliers and manufacturers to arrange for manufacturing, servicing, repairs, warranty claims and in some cases replacements of high valued equipment (up to $100K) including the compatibility of cables and extensions required to connect the instruments to the cable observatories’ backbone.

The Project Engineer has no direct budgetary authority, but will have some latitude with the expenditure of funds on equipment and services required for the successful implementation of projects.

The Project Engineer shares collective responsibility for the proper functioning of equipment, instruments, and tools associated utilized in their work at MTC or in the execution of field operations.

(e) Problem-Solving
Due to the cutting edge nature of the instrumentation, and the adverse conditions where the equipment is installed, the Project Engineer will be frequently required to analyze and identify solutions to complex problems and failures. The Project Engineer will require a solid background in their specific discipline upon which to draw, careful judgment and an ability to find creative and innovative solutions to ongoing system and equipment issues and logistical difficulties that are both timely and cost effective.
He/she will be involved in the planning and execution of installations on the observatories. The Project Engineer will be required to think on their feet and come up with plans and solutions that yield success while in the field as emerging issues will in certain instances overtake the predetermined plans.

5. **Summary of qualifications:**

The successful candidate will have a minimum of a Bachelor’s Degree in Engineering and a minimum of five years’ experience in an applicable Engineering field, or an equivalent combination of education, training and experience.

The candidate must either be a member of the Association of Professional Engineers of British Columbia, or be eligible to become a member.

Essential qualifications include experience with oceanographic instrumentation and equipment, shipboard experience including planning recovery and deployment of marine equipment and exposure to back deck and ROV operations, as well as a strong technical background in relevant technologies.

**Required Experience & Skills:**

- Experience installing and maintaining electronic systems (e.g. Acoustic, Radar, Oceanographic)
- Experience managing projects of various size and complexity that required the application of engineering know-how in the field
- Contract negotiation and management experience
- Working knowledge of marine materials, corrosion and thermal issues
- Experience with CADD software systems (e.g. SolidWorks), database applications and standard office software
- Mechanical workshop experience; capable with hand and power tools, lathes and milling machines
- Strong electronics assembly and wiring, soldering and cable potting skills
- Experience with electronics testing equipment and tools
- Knowledge of PC based command, control and data acquisition
- Knowledge of communications protocols (e.g. 232, 422, 485), Ethernet hardware, TCP/IP, Modbus and UDP facility with systems-level hardware integration
- Programming experience (e.g. C, Python, Matlab)

**Other:**

- Resourceful, with strong problem-solving abilities
- Strong interpersonal, verbal, written and computational communication skills
- Ability to manage multiple tasks in a fast-paced, deadline-driven environment
- Ability to work collegially within a team as well as independently

**Assets:**

- Experience designing subsea equipment, including underwater enclosures, seabed structures and deployment rigging
- Experience developing kernel drivers for embedded systems
- Experience developing software and hardware involving microprocessor-based control systems
- Ability to process data from oceanographic instruments and assess data quality
- Forklift certification
- A Transport Canada approved marine safety course such as Small Craft Basic Safety
- A current Standard First Aid or Marine Basic First Aid certificate

**Date of Submission:**
Signature of Responsible Manager: ____________________________