PEA Job Description

1. Position Identification

<table>
<thead>
<tr>
<th>Position Number</th>
<th>994057</th>
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<tbody>
<tr>
<td>Position Title:</td>
<td>Testing &amp; Development Manager (TDM)</td>
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<tr>
<td>Department:</td>
<td>Ocean Networks Canada</td>
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<tr>
<td>Reports to:</td>
<td>Director, Marine Operations</td>
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<tr>
<td>Number of Direct/Indirect Reports</td>
<td>Direct__14___ Indirect__5___</td>
</tr>
<tr>
<td>Classification Level</td>
<td>SG15</td>
</tr>
<tr>
<td>Last Updated</td>
<td>January 2020</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 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. These instruments 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 cable 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 (T&D) unit is primarily responsible for testing and qualifying instruments and equipment prior to deployment to the cabled observatories and other mobile and land based assets. The Team designs and develops instruments and equipment, repairs and maintains instruments, and supports the planning and execution of field operations related to the observatory maintenance. This includes 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 TDM works in collaboration with the Operations Support and Field Services Teams, in the installation, maintenance and repair of ONC's coastal sub-sea infrastructure. The TDM's responsibilities include:
- Maintenance and repair of the ONC's coastal sub-sea infrastructure
- Development and design of instrument related equipment
- Preparation of instruments for integration into the subsea network
- Consultation with ONC staff, scientists and their technicians, vendors and manufacturers
- Member Marine Operations leadership team
- Participate and/or serve as Expedition Lead during at sea observatory maintenance and installation cruises as required

This position is expected to maintain certifications in forklift and crane operation, standard first aid or marine basic first aid, and a Transport Canada approved marine safety course such as SCTW Basic Safety

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

<table>
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<tr>
<th>Key Responsibilities. % of time</th>
<th>Expectations:</th>
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| Infrastructure maintenance, repair and development of instrument related equipment: 40% | • Oversees the implementation of project plans and budgets for new instruments and instrument related equipment; ensures project plans, budget, requirements and milestones are met and projects are delivered on time and on quality  
• Leads instrument design, electronic equipment development and the preparation of new instruments and instrument related equipment that are compatible with the observatory  
• Oversees the repair, maintenance, cleaning and requalifying of instruments and equipment for redeployment  
• Oversees troubleshooting and diagnosis of issues with remotely deployed instruments, and development of solutions to reduce data loss and equipment damage; unresolved issues are escalated to this position for investigation and resolution  
• Reports to Director Marine Operations major financial and operational matters that are anticipated to impact Marine Operations  
• Provides advice and recommendations regarding the maintenance and replacement of deployed instruments  
• Communicates with contractors, instrument manufacturers and equipment providers as required with respect to the servicing and replacement of scientific instruments and related equipment  
• Collaborates with the Field Services Manager in the design and manufacture of equipment, platforms and structures for instruments and electronic equipment as required  
• Collaborates with ONC Innovation, Science Services staff, Operations Support and Field Services Teams, Director Marine Operations, scientists, manufacturers and vendors in the design of instrumentation and development of electronic equipment  
• Collaborates with ONC Project Management and Science Services staff, and the Director Marine Operations, in the implementation of project plans  
• Serves at administrator level of ONC document management systems; ensure timely and accurate data entry by self and unit staff  
• Coordinates with other ONC Department heads on the administration of the various ONC document management systems. |
| Instrument preparation: 20% | - Oversees instrument, equipment, and testing workflows that guide the testing and qualification of scientific instruments and equipment to be integrated the cabled observatories  
- Consults with Field Services Manager, ONC Software Engineering, Innovation and Science Services staff, external scientists and their technicians, ship and ROV staff etc. regarding instrument requirements, testing and installation arrangements  
- Develops testing and qualification protocols and processes for instrumentation intended for observatory deployment  
- Oversees the testing and qualification of instruments by unit staff  
- Facilitates the completion of work by ONC Software Engineering staff (software development, instrument communications and testing) by ensuring instruments are set up and connected on an agreed upon schedule |
| Leadership: 15 % | - Participates in day-to-day department, and annual planning and long-term strategic planning activities as a member of the Marine Operations leadership team  
- Provides input into the development of project plans, budgets and technical reports for new instrument and instrument related equipment  
- Manages unit activities, resources and priorities to effectively achieve unit and project objectives  
- Leads unit measuring, monitoring and reporting and project-based reporting activities  
- Leads the development, implementation and monitoring of unit policies, protocols and procedures while ensuring compliance with University policies, government regulations and best practices  
- Improves the efficiency and effectiveness of unit systems and processes, consulting with members of the Field Services and Operations Support teams regarding their support requirements  
- Leads regular team meetings to set priorities, plan unit activities, review project implementation plans and encourage collaborative working relations  
- Develops technical and professional skills of staff through mentoring, coaching and effective performance management  
- Collaborates with Director in the development of unit job descriptions and recruitment activities  
- Facilitates cross training so specialized knowledge can be shared between Marine Operations Teams  
- Develops and maintains co-operative, productive, solution-oriented working relationships  
- Provides technical support on shore, or at sea, during ONC cruises and field work as required |
| Field work: 10 % | - Collaborates with the Field Services and Operations Support Managers and Director Marine Operations in cruise planning, mobilization and demobilization activities  
- Collaborates with the Field Services Manager in the development of installation deployment and recovery plans that support the established Cruise Plan  
- Leads annual spares testing activities  
- Oversees the assembly, preparation and staging of instrument platform systems for observatory deployments, and assists as required |
• Participates, and/or serves as Expedition Lead, during at sea maintenance cruises as required
• Oversees documentation of cruises including checklists, cruise reports etc.

Management of MTC Testing and Development work areas: 5 %
• Oversees Testing and Development work areas at MTC; ensure work areas are tidy, organized and safe
• Works with the Operations Support Manager to collaboratively manage MTC space used by the Testing & Development Team, and identify the Teams’ equipment and facility needs and requirements
• Maintains the small and large seawater instrument test status on behalf of ONC

Safety: 5 %
• Establishes safety policies and procedures for the instrument testing facilities at MTC including the testing laboratory and salt water testing tank
• Monitors the safety of ONC staff and contractors working in MTC instrument testing facilities
• Works with University Occupational Health & Safety and Environment, and Testing & Development and Field Services Managers on operational safety planning at MTC
• In the MTC instrument testing facilities and the field, makes decisions with safety as the top priority

4. Classification Factors:

Problem-Solving:
The TDM uses technical knowledge, experience and judgment to solve complex and innovative problems. Due to the cutting edge nature of the instrumentation and the adverse underwater conditions where the equipment is installed, the TDM is frequently required to analyze and identify solutions that are difficult to find to ensure that instruments meet the vigorous demands of the deep sea environment. The TDM is involved in the planning of hazardous installation logistics and the challenge of installing instruments with ROVs from ships including challenging weather conditions.

Work requires in-depth analysis of complex and variable problems as well as critical thinking and judgment to identify solutions that are difficult to find. Solutions require the interpretation, evaluation and adaptation of procedures, policies and precedents. Investigation and innovative thinking are required to develop new methods and procedures.

Responsibility for Financial & Material resources:
The TDM is responsible for the management of an approx. $2.5M science instrument testing and development budget. They are also responsible for the proper functioning of instruments being tested, prepared and staged for installation or redeployment, their ongoing maintenance and repair, and related tools, spares and equipment. This position is also responsible for maintaining documentation for the individual instruments for reference (e.g. instrument modifications).

The TDM provides input into the development of project budgets valued at approx. $1M and higher. They also monitor the implementation of project budgets, advising Director of Marine Operations of major financial matters.

The TDM is also responsible for managing all Marine Operations purchasing tasks including contract management. The value of individual purchase orders can range up to $1.5M+ for supplies, instruments and fiber optic cables. Purchasing responsibilities include negotiating price, service levels and lead time.
The TDM communicates with suppliers to arrange for servicing, repairs, warranty claims and in some cases replacements of high valued equipment (up to $250K).

This position holds a $20,000 P-card.

**Responsibility for Human Resources:**
The TDM receives supervision from and reports to the Director Marine Operations.

The TDM directly supervises Testing and Development staff and indirectly supervises work study and/or co-op students. Direct supervision of unit staff includes job description development, staff recruitment, providing recommendations for hiring, and evaluation of staff performance.

The TDM provides functional supervision to all ONC employees working in the MTC Testing and Development work areas including providing training in applicable policies and procedures, use of testing equipment, and the hazards presented when working with the testing equipment while at sea or near the salt water test tank. As Expedition Lead, the FSM supervises marine operators, Remote Operated Vehicle (ROV) service providers, and contractors, and delegates assigning roles and responsibilities to ONC crew.

**Impact of Decisions and Actions:**
The TDM must complete all work within established frameworks and allotted plans and budgets, meet program, service and business requirements, function effectively as a team leader and member of Marine Operations leadership team, and ensure safety is considered in all aspects of their work.

Specifically, the TDM is accountable for ensuring the safe and efficient operation of the Testing and Development work areas at MTC, instruments, instrument related equipment are designed and prepared to meet the appropriate criteria and functionality in order to avoid or to mitigate failure and positively impact the performance of the ONC observatory. Careful cruise planning and at sea decision making by the TDM has a significant bearing on the performance of the facility and hence the reputation of ONC as a reliable provider of long term, uninterrupted data series. The TDM also acts on behalf of ONC when consulting with external contractors.

Given tight deployment deadlines, the value of the instruments and systems, and the high costs associated with deployment and recovery operations at sea, these tasks are critical. The decisions and actions taken by this position impact both the success of the network and the reputation of ONC and ultimately UVic based on the reliability of the network.

**Independence:**
The TDM makes timely decisions related to the design, preparation and installation of new instruments and related equipment, and cruise operations planning and execution.

The TDM assists in determining and enforcing ONC testing and development policies, procedures and practices to ensure the most effective use of limited staff resources. As manager, the TDM collaborates with the Director Marine Operations and the Executive Director Observatory Operations, in the setting of long-term program strategies, direction and goals for Marine Operations. Informed guidance is difficult to obtain.

Issues that are abnormal, or are of consequence (e.g. major financial, operational or time considerations), staff performance management concerns, or safety issues, will be escalated to the Director Marine Operations in a timely and appropriate manner.
5. **Summary of Qualifications:**

The successful candidate will have a minimum of a Bachelor’s Degree in Engineering and a minimum of ten years’ experience in electronics or electrical engineering, or the equivalent combination of education and experience. The candidate must either be a member of the Association of Professional Engineers of British Columbia, or eligible to become a member.

Essential qualifications include experience with oceanographic instrumentation and equipment, shipboard experience in deployment of marine equipment, as well as a strong technical background in relevant technologies.

**Required:**
- Experience with PC based command, control and data acquisition
- Thorough command of serial communications protocols (EIA 232, 422, 485)
- Good knowledge of Ethernet hardware, TCP/IP and UDP
- Facility with systems-level hardware integration
- Experience with microprocessor-based control systems
- Experience with CAD engineering design software, database applications and standard office software
- Experience with financial/budget administration
- Supervisory experience

**Competency Requirements:**
- Resourceful, with strong problem-solving abilities
- Strong interpersonal, verbal, written and computational communication skills
- Ability to coordinate complex logistics of an ocean-going campaign, among a range of expert technical resources (ship, ROV, scientific technical staff)
- Ability to manage multiple tasks in a fast-paced, deadline-driven environment
- Ability to process data from oceanographic instruments and assess data quality
- Ability to plan, organize and monitor the work and activities of self and direct reports according to priorities, established schedules and deadlines.
- Ability to analyze, interpret and evaluate problems and provide practical, cost effective solutions.
- Ability to communicate effectively with co-workers, scientists, technologists, customers, contractors and the general public, both orally and in writing in the English language.
- Ability to serve as spokesperson, facilitator or participant in meetings and presentations to discuss engineering projects or proposals.
- Ability to provide leadership and establish and maintain a collegial working environment conducive to positive morale, individual style, quality, creativity, and teamwork.

**Assets:**
- 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

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<tr>
<th><strong>Manager’s/Supervisor’s Signature</strong></th>
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