PEA Job Description

1. Position Identification

<table>
<thead>
<tr>
<th>Position Number</th>
<th>991987</th>
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<tbody>
<tr>
<td>Position Title:</td>
<td>Senior Marine Equipment Specialist</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>
</tr>
<tr>
<td>Classification Level</td>
<td>SG 14</td>
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<tr>
<td>Last Updated</td>
<td>September/2018</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 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 Senior Marine Equipment Technologist (SMES) provides technical expertise, consulting on and undertaking instrument, equipment and infrastructure maintenance and installation and instrument, equipment and infrastructure design and development. The SMES provides technical leadership to Marine Equipment Specialists and Project Engineers, supports the installation and maintenance of other mobile and land based assets, and participates and/or serves as Expedition Lead during smaller at-sea observatory maintenance and installation expeditions and field operations 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.

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.</th>
<th>Expectations:</th>
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<tr>
<td>% of time</td>
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<td>Infrastructure</td>
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<tr>
<td>maintenance at MTC or</td>
<td>- Troubleshoots instrument and equipment operational issues, of a high level of size and complexity, with remotely deployed, mobile and land based assets including hardware and software faults and network security issues via the JIRA ticketing system.</td>
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<td>in the field 50%</td>
<td>- Provides advice and direction to ONC Systems and Digital Infrastructure staff regarding instrument performance, hardware, software and network access/security issues, instrument data quality and data acquisition via JIRA ticketing system. Provide direct feedback to the TDM and/or FSM on all operational issues.</td>
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<td>- Repairs and maintains testing equipment, as required, to ensure all are operationally functional.</td>
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<td>- Repairs, maintains, cleans and requalifies marine instruments, instrument support systems, and related equipment according to established practices and standards.</td>
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<td>- Produces field operations work plans, schedules and budgets as directed and reviewed by the FSM.</td>
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<td>- Assembles, prepares and stages instrument platform systems for observatory deployments.</td>
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<td>- Participates and/or leads 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.</td>
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<td>- Assists with the development and maintenance of site specific documentation and procedures, documentation of field activities and summary reports.</td>
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<td>- Provides technical support on shore or at sea as required, including handling heavy items, preparing instruments for recovery or deployment, participation in the JIRA process such as commenting on data quality, etc.</td>
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<td>- Participates in the planning, mobilization and demobilization of major field operations as directed by the FSM.</td>
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<td>- Reports to Manager and Director Marine Operations major financial and operational matters that are anticipated to impact project plans.</td>
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<td>- Updates records in ONC document management systems; ensures timely and accurate data entry.</td>
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<td>Instrument and</td>
<td>- Contributes to the design and construction of new instruments, equipment, platforms, structures and systems, of a high level of size and complexity, including hardware and software components, based on established internal and external requirements. Design work may include preparation of drawings, plans, specifications, work flow and/or budgets.</td>
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<td>equipment design and</td>
<td>- Sources materials and off the shelf components as part of the design process.</td>
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<td>development 30%</td>
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| Leadership 10% | Participates in procurement activities related to construction of designed components, in collaboration with the Operations Support Manager (OSM).
| | Interfaces with suppliers and manufactures dealing with related and other disciplines such as machinists and Engineers in the design and manufacture of components and systems.
| | Tests and qualifies scientific instruments, equipment etc. to be integrated into ONC observatories according to established standards and protocols.
| | Creates test reports according to instrument qualification processes and procedures.
| | Assists Marine Operations Project Engineers with the testing and qualification of new systems including the creation of test reports, evaluations and recommendations.
| | Participates in documentation development and revision as directed by the TDM or the FSM. Documents may include but not limited to, new or updated procedures and policies, drawings, graphics, equipment evaluations, failure analysis, and risk management.
| | Implements quality protocols and processes, reviewing present, suggesting improvements and documenting these as directed by the TDM.

| Consultation with other ONC staff and external parties 10% | Provides engineering and technical leadership, guidance and training to Project Engineers and Marine Equipment Specialists in all aspects of design, maintenance and operation.
| | Demonstrates and encourages compliance with all ONC installation operating policies and procedures; provides support and direction to Marine Operations staff in their interpretation, understanding and application.
| | Participates in the recruitment and orientation of new staff members.
| | Participates in the development of project budgets for new equipment, platforms, structures and systems and in scheduling exercises.

| | Collaborates with ONC Project Management staff, Manager and the Director Marine Operations, in the implementation of project plans and infrastructure maintenance.
| | Consults with ONC staff, scientists, ship and ROV staff and other key stakeholders (e.g. CODAR community) regarding instrument requirements, testing and installation.
| | Interacts with scientists and their technologists to confirm technical specifications and testing and installation arrangements for scientific instrument deployment.
| | Reviews of instrument designs and compatibility constraints with internal and external groups for new and existing instruments and systems.
| | Communicates with contractors and equipment providers as required with respect to the calibration, servicing and replacement of scientific and related equipment.
| | Works with vendors, suppliers and manufactures on product failure analysis as required.
| | Supports ONC Digital Infrastructure staff in charge of software development, instrument communications and testing by setting up and connecting instruments on an agreed upon schedule.
**Assists Operations Support staff with shipping/receiving and inventory duties.**

**Mentors junior staff in standard operational procedures and policies when applicable.**

**Safety**

- At MTC, and in the field, makes decisions with safety as the top priority.
- Ensures the all MTC and the shore stations are maintained at a high operational standard and are a clean, healthy and safe working environment.

### 4. Classification Factors:

#### Problem-Solving:
Due to the cutting edge nature of the instrumentation and equipment, and the adverse conditions where the equipment is installed, the SMES will be frequently required to use their technical expertise to analyze and identify solutions to high level, complex problems and failures. The SMES 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 instrument and equipment issues.

In the workshop environment, the SMES will be tasked with design and assembly projects, of a high level of size and complexity that will require technical expertise to ensure an efficient and reliable solution. The development of these systems requires expertise in converting requirements into solutions, with the understanding that a balance between functionality and reliability must be achieved. This process requires the SMES to have an ability to resolve issues and produce a useable result.

In the field, the SMES will assist or lead the installation of new systems, and perform maintenance on existing ones. The field environment presents unique challenges such as limited access to parts and equipment and controlled workspaces. In the case of not having the needed parts and equipment, the SMES needs to be creative and to come up with solutions that will keep systems operational without introducing new risks and points of failure. Diagnosing problems in the field can be particularly challenging as multiple variables can be involved, and one's ability to control how these variables behave is usually limited. Experience and ingenuity are key to the success of the SMES in their primary role as maintainers of equipment in the field.

Logistics challenges are also commonplace for the SMES. They are involved in all aspects of planning for fieldwork, and must deal with schedule conflicts, equipment not arriving on time, weather delays and a multitude of other variables. The SMES must be organized in their planning and have contingency plans in mind in advance to ensure the success of field operations.

#### Responsibility for Financial & Material resources:
The SMES will be responsible for the proper functioning of instruments, tools, spares and equipment that comprise the network’s infrastructure. This will include knowing the approximate value of equipment, suppliers, and equipment maintenance schedules including any required or suggested upgrades. The SMES will communicate directly with suppliers to arrange for servicing, repairs, warranty claims and in some cases replacements of equipment including the compatibility of cables and extensions required to connect the instruments to the backbone. The SMES will recommend any software, hardware or tools required to complete his/ her job.

#### Responsibility for Human Resources:
The Senior Project Engineer will provide technical guidance and direction to Project Engineers, Marine Equipment Specialists and Junior Engineer and Specialist positions, co-op or work study students and in some instances contractors working with ONC. The Senior
Project Engineer may supervise students and Marine Operations staff in the field when Expedition Lead. The SS will train and oversee other ONC employees with regard to the specific hazards presented by the individual instruments particularly with regard to working with electrical high voltage equipment both at sea and at the ONC testing facility at the MTC.

Formal supervision of the SMES will be given by the FSM or the TDM, depending on which unit the SMES is assigned to. However, systems-related direction or guidance may be provided by either the FSM or the TDM.

**Impact of Decisions and Actions:**
The SMES will be accountable for troubleshooting issues with deployed equipment and instruments, designing reliable, cost effective instruments, equipment and infrastructure, and adequately testing instruments prior to deployment in order to avoid or to mitigate failure. Given the high costs associated with the deployment and recovery operations at sea, this task is critical. The SMES will be responsible for making timely decisions related to the readiness of the equipment to be deployed. These decisions will directly impact both the success of the network and the reputation of ONC and ultimately UVic based on the reliability of the network.

**Independence:**
The SMES exercises a high degree of independence when executing job responsibilities, taking actions and making decisions. The SMES has the authority to pursue concepts, and apply resources in order to maintain, repair and 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 SMES will ensure that instruments are thoroughly tested and meet the appropriate criteria and functionality prior to deployment on the ONC observatory. The SMES will contribute to the design and manufacture of equipment, platforms and structures and consult with scientists, ship personnel, and ROV staff on behalf of ONC.

In field operations, the SMES may work independently or as part of a larger team, maintaining, installing and recovering instrument systems in a variety of venues ranging from shore side installations to offshore deep water locations. The SMES may be the lead representative of ONC in the field depending on the scope of work, having to make independent decisions on occasion without consultation with the FSM.

### 5. Summary of Qualifications:
The successful candidate will have a technical education at a degree, or technologist level with a diploma from a college or technical institute and additional specialized training, and a minimum of nine years of related experience, or the equivalent combination of education, training and experience. Essential qualifications include experience with marine scientific instrumentation and equipment, field experience in deployment of equipment, as well as a strong technical background in relevant technologies.

**Required**
- Mechanical workshop experience; capable with hand and power tools
- 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
- Facility with systems-level hardware integration
Strong electronic troubleshooting skills
Experience with CADD software systems (e.g. SolidWorks), database applications and standard office software
Documentation, diagram and technical writing skills

Competency Requirements
- 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 provide leadership and work collegially within a team as well as independently
- Ability to plan, organize and monitor the work and activities of self 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

Assets
- Programming experience (e.g. C, Python, Matlab)
- 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

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<thead>
<tr>
<th>Employee’s Signature:</th>
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<table>
<thead>
<tr>
<th>Manager's/Supervisor's Signature</th>
<th>Date:</th>
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