1. Position Identification

Position Number: 991968, 991970, 992231, 992232, 993152, 993343, 993784, 993789

Position Title: Marine Equipment Specialist (MES)

Department: Ocean Networks Canada

Reports to: Field Services Manager (FSM) or Testing and Development Manager (TDM)

Number of Direct/Indirect Reports: Direct 0, Indirect 0

Classification Level: SG13

Current Incumbent (if applicable):

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 Marine Equipment Technologist (MES) will be primarily responsible for instrument, equipment and infrastructure maintenance and installation and secondarily for instrument, equipment and infrastructure design and development. The MES will participate in the remote marine deployment and retrieval in consultation with other ONC staff, Scientists, ship staff and Remotely Operated Vehicle (ROV) staff. He or She will also support the installation and maintenance of other mobile and land based assets.

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

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<th>Key Responsibilities.</th>
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<th>Expectations:</th>
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| **Infrastructure Maintenance at MTC or in the Field 60%** | | • Troubleshoot instrument and equipment operational issues with remotely deployed, mobile and land based assets including hardware and software faults and network security issues via the JIRA ticketing system  
• 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.  
• Repair and maintain testing equipment, as required, to ensure all are operationally functional.  
• Repair, maintain, clean and requalify marine instruments, instrument support systems, and related equipment according to established practices and standards.  
• Produce field operations work plans, schedules and budgets as directed and reviewed by the FSM.  
• Assemble, prepare and stage instrument platform systems for observatory deployments.  
• Participate and/or lead 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.  
• Assist with the development and maintenance of site specific documentation and procedures, documentation of field activities and summary reports.  
• Provide 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.  
• Participate in the planning, mobilization and demobilization of major field operations as directed by the FSM.  
• Complete other related duties as assigned. |
| **Instrument and Equipment design and development 30%** | | • Contribute to the design and construction of new instruments, equipment, platforms, structures and systems 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.  
• 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).

- Interface with suppliers and manufacturers dealing with related and other disciplines such as machinists and Engineers in the design and manufacture of components and systems.
- Test and qualify scientific instruments, equipment etc. to be integrated into ONC observatories according to established standards and protocols.
- Create test reports according to instrument qualification processes and procedures.
- Assist Marine Operations Project Engineers with the testing and qualification of new systems including the creation of test reports, evaluations and recommendations.
- Participate 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.
- Implement 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%

- Consult with ONC staff, scientists, ship and ROV staff and other key stakeholders (e.g. CODAR community) regarding instrument requirements, testing and installation.
- Interact with scientists and their technologists to confirm technical specifications and testing and installation arrangements for scientific instrument deployment.
- Review of instrument designs and compatibility constraints with internal and external groups for new and existing instruments and systems.
- Communicate with contractors and equipment providers as required with respect to the calibration, servicing and replacement of scientific and related equipment.
- Work with vendors, suppliers and manufactures on product failure analysis as required.
- Support ONC Digital Infrastructure staff in charge of software development, instrument communications and testing by setting up and connecting instruments on an agreed upon schedule.
- Assist Operations Support staff with shipping/receiving and inventory duties.
- Mentor 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.
- 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.
### 4. Classification Factors:

(a) Independence of action, authority and decision making:
The MES will ensure that instruments are thoroughly tested and meet the appropriate criteria and functionality prior to deployment on the ONC observatory. He/She 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 MES 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 MES 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.

(b) Accountability – scope and impact:
The MES 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. He/She 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.

(c) Supervision given and received:
This position provides technical guidance and direction to the Junior MES and Junior Field Services Technologist, various term or work study students and in some circumstances contractors working for ONC. He/She 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.

Supervision of the MES will be given by the Managers, Testing & Development or Field Services. The MES may also receive systems-related guidance or direction from either the TDM or FSM.

(d) Budget, Financial & Material resources:
The MES 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. He/ She 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 MES will recommend any software, hardware or tools required to complete his/ her job.

(e) Problem-Solving
Due to the complicated nature of the instrumentation and the challenging environment in which they operate, the MES will be frequently required to analyze and identify solutions for problems that are difficult to resolve, in external conditions that can be extremely challenging.
In the workshop environment, the MES will be tasked with design and assembly projects that will require technical skills and knowledge 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 MES to have an ability to resolve issues and produce a useable result.

In the field the MES will assist with 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 MES 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 MES in their primary role as maintainers of equipment in the field.

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

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 7 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 Skills and Experience:
- 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 CAD/CAM software systems (e.g. SolidWorks), database applications and standard office software
- Documentation, diagram and technical writing skills

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:
- 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

Date of Submission: ________________________________

Signature of Responsible Manager: __________________________