



## **ANNEX D**

### **Appendix 1**

#### **Compliance Matrix**

#### **Naval Remote Weapon Station System**

## **1. INTRODUCTION**

- 1.1 This document identifies the procedure by which proposals for the Naval Remote Weapon Station (NRWS) System will be evaluated by Canada with respect to the mandatory Request for Proposal (RFP) requirements of Volume 2- Annex B Statement of Work (SOW), Volume 2 - Annex B Appendix 3 Technical Statement of Requirements (TSOR), and Volume 2 - Annex B Appendix 5 Computer Based Trainer Specification.
- 1.1.1 Bidders must complete and submit this Compliance Matrix with their proposals in order to be given consideration in the bid evaluation process.

## **2. MANDATORY REQUIREMENTS**

- 2.1 All SOW, TSOR and Computer Based Trainer Specification requirements are mandatory. For all requirements itemized in Tables 1, 2, and 3, the Bidder shall indicate whether the proposed solution to the requirement is compliant or non-compliant by placing an 'X' in the appropriate 'Yes' or 'No' cell under the "Compliant" column.
- 2.2 The Bidder should not place the indications required by Paragraph 2.1 in any cells that are on the same row as SOW, TSOR, and Computer Based Trainer Specification headings, sub-headings, and sub-sub-headings in Tables 1, 2, and 3. Where a Bidder has erroneously made an indication in one of the precluded rows, the evaluation team will only consider responses to requirements for which a Compliance Method has been specified by Canada.
- 2.3 The Bidder shall reference where proof of compliance may be found in their bid, and indicate this reference in the "Bidder's Response" column of Tables 1, 2, and 3 for each mandatory requirement.
- 2.4 Tables 1, 2, and 3 each contain columns titled "Compliance Method" that indicates the minimum required for demonstrating compliance with a mandatory requirement. Only the following methods are acceptable for supporting a Bidder's claim of compliancy for each of the mandatory requirements:
  - a. Table 1:
    - (1) A – Compliance statement to clearly agree that the stated work will be completed;
    - (2) B – Provision of details as to how the stated work will be undertaken; and
    - (3) W – Provision of identified DID with the bid;
  - b. Table 2 and 3:

- (1) C – A compliance statement which clearly demonstrates that the solution proposed for the NRWS System fully complies with the requirement;
- (2) D – Product specifications, manuals, or other published documentation that demonstrates that the solution proposed for the NRWS System fully complies with the requirement;
- (3) E – Analysis or simulation predicting the performance of solution(s) proposed for the NRWS System, which demonstrates full compliance with the requirement; and
- (4) F – Test results or documented performance of existing equipment proposed for the NRWS System, which demonstrates full compliance with the requirement.

### **3. POINT-RATED REQUIREMENTS**

- 3.1 In addition to mandatory requirements, bids will be evaluated on a point-rated basis with respect to certain SOW, TSOR, and Computer Based Trainer Specification requirements in accordance with Volume 1 - Annex D Bid Evaluation Plan Tables 2 through 7. In order to be awarded points in accordance with Volume 1 - Annex D Bid Evaluation Plan Tables 2 through 7, information must be indicated in Tables 1, 2, and 3 below, and provided with proposals.

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>3.1 Project Manager</b>				
3.1.1 The Contractor shall implement and maintain a team, headed by a single Project Manager (PM), to carry out the Work required in this SOW.	A			
<b>3.2 Project Management Plans</b>				
3.2.1 The Contractor shall prepare, deliver and maintain a Project Management Plan (PMP) in accordance with Contract Data Requirements List (CDRL) NRWS-PM-001 for Authorization by Canada.	A and W			
3.2.2 The Contractor shall prepare, deliver and maintain an Integrated Master Schedule (IMS) in accordance with CDRL NRWS-PM-002 for Authorization by Canada.	A and W			
<b>3.3 Scope and Schedule Management</b>				
3.3.1 The Contractor shall implement the scope of the Work specified in this SOW in accordance with the project management processes of the PMP and IMS Authorized by Canada.	A and B			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
3.3.5 The Contractor shall prepare, deliver and maintain all project deliverables in accordance with: <ul style="list-style-type: none"> <li>A. The CDRL and associated Data Item Descriptions (DID); and</li> <li>B. Hardware and software deliverables in accordance with the Technical Statement Of Requirements (TSOR).</li> </ul>	A			
3.3.7 The Contractor shall use the IMS as a baseline against which project progress shall be controlled and measured, and against which project changes shall be evaluated.	A			
3.3.8 The Contractor shall address the following schedule requirements for HFX NRWS Systems in project planning:	A and B			
a. Plan long-term schedules for installation and STW as applicable to ships listed in Table 2;	A and B			
b. Plan long-term schedules to accommodate First Article NRWS System installation and STW;	A and B			
c. Plan long-term schedules for subsequent shipboard installations and STW assuming that they will be uniformly distributed throughout the year as indicated by Table 2;	A and B			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
d. Consult Canada on the second Monday of April of each year to Contract completion to acquire an updated schedule for proposed ship availability;	A			
e. Plan and execute all Contractor activities in ships to accommodate a minimum of one month notice from Canada regarding the final availability dates for each ship;	A			
f. Plan and execute all Contractor activities in ships to accommodate a minimum of one month notice from Canada, for the substitution of any ship listed in Table 2, with any other ship in the same region; and	A			
g. Plan and execute all Contractor activities in Canada's ships in conjunction with existing ship programs.	A			
3.3.9 The Contractor shall address the following schedule requirements for Queenston Class NRWS Systems in project planning:	A and B			
a. Plan long-term schedules for delivery in accordance with Table 2	A and B			
b. Consult Canada on the second Monday of April of each year to Contract Completion to acquire an updated schedule for proposed Queenston Class availability; an	A			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
c. Deliver each Queenston Class NRWS System no sooner than 60 business days and no later than 40 business days prior to the installation dates specified by Canada on the second Monday of April of each year.	A			
<b>3.4 Quality Management</b>				
3.4.1 The Contractor shall implement a Quality Management Program in accordance with the PMP of CDRL NRWS-PM-001 for the Work specified in this SOW.	A and W			
<b>3.5 Risk Management</b>				
3.5.1 The Contractor shall implement a Risk Management Program in accordance with the PMP of CDRL NRWS-PM-001 for all Work specified in this SOW.	A and W			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>3.6 Documentation Deliverables</b>				
<b>3.6.1 Shared Data Environment</b>				
3.6.1.1 The Contractor shall implement a web-based Shared Data Environment (SDE) that will enable: <ul style="list-style-type: none"> <li>a. Only personnel Authorized by Canada to access the SDE;</li> <li>b. Canada and the Contractor to store, exchange and share information;</li> <li>c. Canada and the Contractor to render documents as read-only, and to edit documents via password protection;</li> <li>d. Canada and the Contractor to amend and add comments to deliverable documentation via password protection;</li> <li>e. Canada and the Contractor to track all amendments and comments to deliverables, including the identification of individual editor or commenters; and</li> <li>f. All data in the SDE to be maintained in accordance with Section 4.7.</li> </ul>	A and B			



Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>4.0 SYSTEM ENGINEERING</b>				
<b>4.1 General</b>				
4.1.2 The Contractor shall prepare and deliver a System Engineering Management Plan in accordance with CDRL NRWS-SE-001.	A and W			
4.1.3 The Contractor shall conduct system engineering in accordance with the System Engineering Management Plan and the requirements of this SOW.	A and B			
4.1.4 The Contractor shall conduct system engineering to ensure that all proper approvals for International Trade in Arms Regulations are obtained for the NRWS System and all associated deliverables.	A			
<b>4.2 Requirement Management</b>				
4.2.4 The Contractor shall prepare and deliver a final System Specification in accordance with CDRL NRWS-SE-002 that will become the Functional Baseline when Authorized by Canada.	A			
4.2.5 The Contractor shall design the NRWS System following Authorization of the System Specification and SRR Minutes by Canada, and in accordance with all other Event Prerequisites of Table 1, of this SOW.	A and B			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
4.2.6 The Contractor shall prepare and deliver a Verification Cross Reference Matrix in accordance with CDRL NRWS-SE-003, that shall identify for each requirement in the TSOR what verification method(s) will be used by the Contractor to verify compliance of the NRWS System and all associated deliverable material, documents, and services with the TSOR.	A			
<b>4.4 Safety Management</b>				
4.4.1 The Contractor shall prepare, deliver, and maintain a Safety Control Plan in accordance with CDRL NRWS-SE-006.	A			
<b>4.5 Delivery, Installation, and STW</b>				
<b>4.5.1 NRWS System Delivery</b>				
4.5.1.1 The Contractor shall deliver each NRWS System to the locations specified in Table 2, in accordance with the IMS.	A			
4.5.1.2 The Contractor shall store each NRWS System until each component is installed.	A			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>4.5.2 HFX Class NRWS System Installation</b>				
4.5.2.2 The Contractor shall install each NRWS System in each ship listed in Table 2 in accordance with the Authorized NRWS System HFX Class Engineering Change (EC) Specification generated from ECGP of CDRL NRWS-TD-001.	A and B			
<b>4.6 Acceptance Process</b>				
<b>4.6.1 System Acceptance</b>				
4.6.1.1 The Contractor shall provide Objective Evidence (OE) of NRWS System and associated deliverable compliance with all requirements of this SOW for Acceptance by Canada via the Acceptance Program in accordance with CDRL NRWS-SE-009.	A and W			
<b>4.6.2 Test and Evaluation Master Plan</b>				
4.6.2.1 The Contractor shall prepare, deliver, and maintain a TEMP in accordance with CDRL NRWS-SE-009 for Authorization by Canada, to define the entire process by which compliance of the proposed NRWS System and associated deliverables will be demonstrated with respect to this SOW.	A and W			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>4.7 Configuration Management</b>				
<b>4.7.1 General</b>				
4.7.1.1 The Contractor shall prepare, deliver for Acceptance and maintain a Configuration Management (CM) Plan in accordance with CDRL NRWS-CM-001.	A and W			
4.7.1.2 The Contractor shall implement the CM Process to manage the configuration of the NRWS System and associated deliverables in accordance with the Authorized CM Plan.	A and B			
<b>4.7.3 Configuration Audits</b>				
4.7.3.1 The Contractor shall support Canada in conducting Functional Audit and PCA following Acceptance of the FAT Test Reports for each First Article NRWS System configuration variant.	A and B			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>4.8 Technical Documentation</b>				
<b>4.8.1 Engineering Change Guidance Package</b>				
4.8.1.1 The Contractor shall prepare and deliver an ECGP in accordance with CDRL NRWS-TD-001 to assist in defining all changes required to HFX Class ships to accommodate the NRWS System.	A and B			
4.8.1.2 The Contractor shall prepare the ECGP based on the Hull and Cabling information outlined in the Installation Guidance Package found in Annex B, Appendix 4.	A			
4.8.1.7 The Contractor shall conduct an on-site survey of each HAL Class vessel using the NRWS System HAL Class EC Specification.	A and B			
4.8.1.8 If configuration deviations are identified during the on-site survey that will impact the NRWS System installation, the Contractor shall particularize the NRWS System HFX Class EC Specification, for the surveyed HFX Class ship and deliver it to Canada for Authorization.	A			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>5.0 INTEGRATED LOGISTIC SUPPORT</b>				
<b>5.1 General</b>				
5.1.2 The Contractor shall undertake all ILS that may be required to implement and maintain each NRWS System and its associated deliverables until final Acceptance of each NRWS System deliverable by Canada.	A, B			
<b>5.2 Integrated Logistic Support Planning</b>				
<b>5.2.1 Logistic Support Planning</b>				
5.2.1.1 The Contractor shall prepare and deliver an ILS Plan in accordance with CDRL NRWS-ILS-001 to define how the ILS requirements of this SOW will be addressed for Authorization by Canada.	A, W			
<b>5.2.2 Logistic Support Analysis</b>				
5.2.2.1 The Contractor shall conduct a Logistic Support Analysis (LSA) on the NRWS System in accordance with the ILS Plan.	A and B			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>5.3 Initial Provisioning</b>				
<b>5.3.1 Sparing</b>				
5.3.1.1 The Contractor shall provide quantities of initial Level 1 and 2 spares as follows:  a. To support each NRWS System that will be implemented in the units itemized in Table 2, of this SOW; and  b. To support each in-service NRWS System for the first two (2) years of operation.	A			
5.3.1.2 The Contractor shall deliver each set of Level 1 spares and Special Tools and Test Equipment prior to each NRWS System STW.	A			
5.3.1.3 The Contractor shall deliver all Level 2 spares and Special Tools and Test Equipment prior to First Article SAT.	A			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>5.3.2 Long Lead Time Initial Provisioning Conference</b>				
5.3.2.4 The Contractor shall define the proposed LLTIP processes and each materiel item at the LLTIP Conference in accordance with the LLTIP Conference Documentation Package of Paragraph 5.3.2.3.	A and B			
<b>5.3.3 Initial Provisioning Conference</b>				
5.3.3.3 The Contractor shall define the proposed NRWS IP processes and each materiel item at the IP Conference in accordance with the IP Conference Documentation Package of Paragraph 5.3.3.2.	A and B			
<b>5.4 Training Development Program</b>				
5.4.1 The Contractor shall create a Training Development Program that addresses each of the requirements specified in this SOW and is consistent with the Canadian Forces Individual Training and Education System principles.	A and B			
5.4.2 The Contractor shall consult Canada for information on occupations, positions, training and work environments that will be affected by the acquisition of the NRWS System.	A			



Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
5.4.3 The Contractor shall create a Task List for operators and maintainers, identifying operator and maintenance tasks for system, sub-system, and integrated system.	A and B			
5.4.4 The Contractor shall identify Performance Objectives for each Task List created.	A and B			
5.4.5 The Contractor shall create Enabling Objectives to address the new skills and knowledge required for the Training Development Program.	A and B			
5.4.6 The Contractor shall create a summary of the recommended training materials, aids, and equipment required for the Training Development Program.	A and B			
<b>5.5 Initial Cadre Training</b>				
5.5.1 The Contractor shall prepare and deliver an NRWS System Operator ICT Package in accordance with CDRL NRWS-ILS-006 based upon the Authorized Training Development Program Report.	A			
5.5.2 The Contractor shall prepare and deliver a NRWS System Maintainer ICT Package in accordance with CDRL NRWS-ILS-006 based upon the Authorized Training Development Program Report.	A			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
5.5.3 The Contractor shall structure Operator and Maintainer training around the conventional, classroom, instructor-led format, with provision for "hands-on" time with an NRWS to exercise the required Operator and Maintainer skills.	A and B			
5.5.4 The Contractor shall conduct Operator ICT, based upon the Authorized ICT package, for a minimum of 10 to a maximum of 15 students, at locations designated by Canada.	A			
5.5.5 The Contractor shall conduct Maintainer ICT, based upon the Authorized ICT package, for a minimum of 10 to a maximum of 15 students, at locations designated by Canada.	A			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>5.6 Manuals</b>				
5.6.1 The Contractor shall prepare, and deliver the following manuals: <ul style="list-style-type: none"> <li>a. Installation and Set-To-Work Manual in accordance with CDRL NRWS-TD-003;</li> <li>b. System User Manual in accordance with CDRL NRWS-TD-004;</li> <li>c. Illustrated Parts Breakdown in accordance with CDRL NRWS-TD-005; and</li> <li>d. Maintenance Manual in accordance with CDRL NRWS-TD-006.</li> </ul>	A			
<b>5.7 Computer Based Trainers</b>				
5.7.1 The Contractor shall supply Computer Based Trainers to train the NRWS Operators on how to use the NRWS System.	A and B			
5.7.2 The Contractor shall meet all requirements contained in the Computer Based Trainer Specification found in Annex B, Appendix 5.	A and B			
5.7.3 The Contractor shall deliver Computer Based Trainers to CFFSE.	A			

Table 1 – Mandatory SOW Requirements				
SOW Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
5.7.4 The Contractor shall deliver Computer Based Trainers to CFNES.	A			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>3. PERFORMANCE REQUIREMENTS</b>				
<b>3.1 Threats</b>				
3.1.1 The NRWS System shall defend against the threats listed in Table 1.	C			
<b>3.2 Surveillance</b>				
3.2.1 Each NRWS mount shall be provided with an Electro-Optical (EO) sensor suite that allows the Operator to detect, in both day and night conditions the threats listed in Table 1 to this Appendix at a range of 2,000 metres.	C and D or E or F			
3.2.2 The NRWS EO sensor suite shall allow the Operator to identify, in both day and night conditions, the threats listed in Table 1 to this Appendix at a range of 1,800 metres, with the exception of the Personnel threat	C and D			
3.2.3 The NRWS EO sensor suite shall allow the Operator to conduct fall of shot observation at a range of 1,000 metres while using 0.50 Calibre tracer ammunition.	C and D			
3.2.4 The NRWS EO sensor suite shall include a Thermal Imaging Camera (TIC).	C and D			
3.2.4.1 The NRWS TIC shall be located on the NRWS Mount.	C			
3.2.4.2 The NRWS TIC shall have a variable field of view.	C and D			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
3.2.4.3 The NRWS TIC shall have a Wide Horizontal Field of View (FOV) of at least 9.0 degrees.	C and D			
3.2.4.4 The NRWS TIC shall have a Narrow Horizontal FOV in the range of 2.0 degrees to 4.0 degrees.	C and D			
3.2.4.5 The NRWS TIC shall allow the Operator a 50 percent probability of identifying a unprotected man standing erect as described in STANAG 4512, characterized by a temperature difference, target to background, of 2K with a background temperature of 288K at a range of 1,600 metres and a visibility level characterized by an atmospheric IR attenuation factor of 0.2/kilometre in accordance with STANAG 4347.	C and D and F			
3.2.5 The NRWS EO sensor suite shall include a day camera.	C and D			
3.2.5.1 The NRWS day camera shall be located on NRWS Mount.	C			
3.2.5.2 The NRWS day camera shall have a variable continuous zoom.	C and D			
3.2.5.3 The NRWS day camera zoom shall perform at a minimum in all the ranges of horizontal FOV from 3.0 degrees to 40.0 degrees.	C and D			
3.2.5.4 The NRWS day camera shall have a colour mode.	C and D			

Table 2 – Mandatory TSOR Requirements					
TSOR Requirement		Compliance Method	Bidder’s Response	Compliant	
				Yes	No
3.2.5.5	<p>The NRWS day camera shall allow the Operator a 50 percent probability of identifying an unprotected man standing erect as described in STANAG 4512 at a range of 1,800 metres under the following conditions:</p> <p>a. A clear day with atmospheric transmittance of 23.5 kilometres at sea level, in the visible wavelengths, 1E04 lux illuminance and line of sight;</p> <p>b. A target contrast of 19%; and</p> <p>c. Low turbulence conditions: Cn2=1E-14 (m-2/3).</p>	C and D and F			
3.2.6	The NRWS EO sensor suite shall include a Class 1 laser range finder (LRF) in accordance with American Standards Institute (ANSI) Z136.1, 2014.	C and D			
3.2.6.1	The NRWS LRF shall measure range of the threats listed in Table 1 at 2,000 metres.	C and D or E or F			
3.2.6.2	The NRWS LRF shall measure range with an accuracy of +/-5 metres against the threats listed in Table 1 when the threats are in the range of 200 metres to 1,000 metres.	C and D or E or F			
3.2.7	The NRWS shall have a surveillance mode whereby the weapon shall be de-coupled from the EO sensor suite and elevated to a minimum of 15 degrees relative to the line of site of the EO sensor suite.	C and D			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>3.3 Acquisition and Tracking</b>				
3.3.1 The NRWS shall be a real-time system such that the response to a selected function must be at such a rate that there is no delay discernible by the Operator.	C			
3.3.2 The NRWS shall have mount velocities and accelerations, in order to track the threats listed in Table 1 on closing, crossing, and manoeuvring courses at ranges of 200 metres and above.	C and D			
3.3.3 The NRWS shall enable the Operator to select a threat for automatic tracking.	C and D			
3.3.4 The NRWS shall automatically acquire the threats listed in Table 1 to this Appendix in day conditions.	C and D			
3.3.5 The NRWS shall automatically track the acquired threats in day conditions once selected by the Operator.	C and D			
3.3.6 The NRWS shall automatically acquire the threats listed in Table 1 to this Appendix in night conditions.	C and D			
3.3.7 The NRWS shall automatically track the acquired threats in night conditions once selected by the Operator.	C and D			
3.3.8 The NRWS shall enable the Operator to remotely acquire and track threats	C and D			



Table 2 – Mandatory TSOR Requirements					
TSOR Requirement		Compliance Method	Bidder’s Response	Compliant	
				Yes	No
3.3.9	The NRWS shall be a stabilized platform that maintains the EO sensor suite and weapon within 1.0 milliradian standard deviation pointing accuracy, while in Sea State 3 as defined in the World Meteorological Organization (WMO) code tables and as described in Table 4.	C and E or F			
3.3.10	The NRWS shall acquire and track the threats listed in Table 1 to this Appendix at all ranges from 50 metres to 1,000 metres.	C and E or F			
3.3.15	The NRWS shall automatically re-acquire and track stationary threats, in the event that the threat has been obstructed for up to and including 2 seconds.	C and E or F			
3.3.16	The NRWS shall automatically re-acquire and track dynamic threats, in the event that the threat has been obstructed for up to and including 2 seconds.	C and E or F			
3.3.17	The NRWS shall have an automatic re-acquisition probability of at least 90%.	C and E or F			
3.3.18	The NRWS EO sensor suite shall be independently stabilized from the weapon cradle.	C and D			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>3.4 Fire Control and Engagement</b>				
3.4.1 The NRWS shall produce a fire control solution on the threats listed in Table 1 to this Appendix while the threats are stationary at all ranges from 200 metres to 1,000 metres.	C and E or F			
3.4.2 The NRWS shall produce a fire control solution on the threats listed in Table 1 to this Appendix while the threats are manoeuvring at all ranges from 200 metres to 1,000 metres.	C and E or F			
3.4.3 The NRWS shall produce a fire control solution on the targets listed in Table 2 to this Appendix while the targets are stationary at all ranges from 200 metres to 1,000 metres.	C and E or F			
3.4.4 The NRWS shall produce a fire control solution on the targets listed in Table 2 to this Appendix while the targets are manoeuvring at all ranges from 200 metres to 1,000 metres.	C and E or F			
3.4.5 The NRWS shall produce a fire control solution within 16 seconds or less on threats listed in Table 1, when a verbal designation is given to the Operator of the surface threat range and surface threat bearing anywhere within the NRWS's weapon arc.	C and E or F			
3.4.7 The NRWS shall maintain the threat at the centre of the Operator Display when the fire control solution is applied.	C and D			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
3.4.15 The NRWS Mount shall be capable of being aimed locally, by physically removing or disengaging any drive system, disabling remote functions, and locally firing the weapon.	C and D			
3.4.16 The NRWS Operator Console shall enable the Operator to offset the firing aim point when tracking threats and targets.	C and D			
3.4.17 The NRWS Operator Console shall enable the Operator to engage the threats listed in Table 1 from 50 metres to at least 600 metres.	C			
<b>3.5 Weapon Effectiveness</b>				

Table 2 – Mandatory TSOR Requirements					
TSOR Requirement		Compliance Method	Bidder's Response	Compliant	
				Yes	No
3.5.1	<p>The NRWS shall achieve at least 7 hits against a surface target within 16 seconds or less of obtaining a fire control solution where:</p> <p>a. the FN M2 0.50 Calibre HMG is mounted;</p> <p>b. the target has an aspect ratio of 2 by 1 and presents a vulnerable area of 2 square metres;</p> <p>c. the surface target is closing the NRWS Mount at a speed through the water of 25 metres per second while conducting a continuous narrow weave;</p> <p>d. not more than 50 rounds are expended; and</p> <p>e. the engagement starts at 600 metres.</p>	C and E or F			

Table 2 – Mandatory TSOR Requirements					
TSOR Requirement		Compliance Method	Bidder's Response	Compliant	
				Yes	No
3.5.2	<p>The NRWS shall achieve at least 7 hits against an air target within 16 seconds or less of obtaining a fire control solution where:</p> <p>a. the FN M2 0.50 Calibre HMG is mounted;</p> <p>b. the target has an aspect ratio of 2 by 1 and presents a vulnerable area of 2 square metres;</p> <p>c. the target is closing the NRWS Mount at an airspeed of 64 metres per second, without evasive manoeuvres;</p> <p>d. not more than 100 rounds are expended; and</p> <p>e. the engagement starts at 600 metres.</p>	C and E or F			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<p>3.5.3 The NRWS shall achieve a Circular Error Probable (CEP) of 2.5 milliradians or less where:</p> <ul style="list-style-type: none"> <li>a. the target is a vertical panel with a centred, high contrast aim point;</li> <li>b. the target is towed on a steady course and at a speed of 8 to 10 knots;</li> <li>c. the firing ship is stationed such that a constant target bearing perpendicular to the target course +/- 2 degrees and a constant target range of 500 metres +/- 50 metres are maintained;</li> <li>d. the sea state is not less than Sea State 1 and not more than Sea State 3 as defined in the WMO code tables and as described in Table 4;</li> <li>e. the salvo size is 1;</li> <li>f. the sample size is not less than 100 rounds;</li> <li>g. CEP of 2.5 milliradians shall be interpreted to mean that not less than 50% of the rounds fired shall land on or within a circle of a radius equivalent to 2.5 milliradians for the range at the time of firing; and</li> <li>h. rounds fired for alignment/calibration are not scored or counted in the sample.</li> </ul>	C and E or F			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>3.6 Power</b>				
3.6.3 The NRWS shall operate in full compliance with this TSOR for not less than 10 minutes without ships power.	C and D			
<b>3.7 Weapon Aiming and Firing Limitation</b>				
3.7.1 The NRWS System shall incorporate firing circuit interrupts.	C and D			
3.7.2 The NRWS System shall have a firing enable key.	C and D			
3.7.3 The NRWS shall have a readily accessible override function located at the NRWS mount.	C and D			
3.7.4 The NRWS shall have safety interlocks that will prevent NRWS mount movement and firing functions in the event that the NRWS mount is not safe to operate.	C and D			
3.7.5 If the NRWS has an onboard trainer, the onboard trainer shall incorporate software and hardware inhibits to prevent operation of the NRWS mounted weapon.	C and D			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
3.7.6 The NRWS shall have adjustable mechanical firing cut-outs for training, elevation and depression.	C and D			
3.7.7 The NRWS shall have adjustable firing cut-outs in software to ensure the weapon cannot be fired within a distance of the ships silhouette (2.5 calibres (32 millimetres) from ship's hard obstructions and more for antennas).	C and D			
<b>3.8 Ammunition Handling</b>				
3.8.1 The NRWS mount ammunition box shall accommodate not less than 200 rounds of linked 12.7 millimetre ammunition when the FN M2 0.50 Calibre HMG is mounted and not less than 400 rounds of linked 7.62 millimetre ammunition when the C6 machine gun is mounted.	C and D			
3.8.2 The NRWS mount shall collect casings, rounds and links ejected from the weapon.	C and D			
3.8.3 The NRWS mount ammunition box shall be located on the NRWS mount, without requiring access below deck.	C and D			
<b>3.9 Operator Console</b>				



Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
3.9.6 The NRWS Operator Console shall incorporate a selector switch to allow operation of one of two NRWS mounts as selected by the Operator.	C			
3.9.7 The NRWS Operator Console shall only control the NRWS mount that has been selected by the selector switch.	C			
3.9.8 The NRWS Operator Console shall comply with MIL-STD-1472G section 5.10.3.2, section 5.10.3.4.4, section 5.10.3.7 and section 5.10.4.	C and D			
3.9.9 The NRWS Operator Console selector switch shall allow operation of the selected NRWS mount only if the NRWS mount is not currently selected for operation.	C and D			
3.9.10 The NRWS Operator Console shall have an Operator display.	C and D			
3.9.11 The NRWS Operator Console shall incorporate Operator controls.	C and D			
3.9.12 The NRWS shall have a video recorder.	C and D			
<b>3.10 Initialization and Built-In Test</b>				

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<p>3.10.1 The NRWS shall initialise from a shutdown state to full functionality in accordance with this TSOR in:</p> <ul style="list-style-type: none"> <li>a. less than 2 minutes, with the exception of the TIC, when selected by the Operator; and</li> <li>b. less than 7 minutes, including the TIC, when selected by the Operator.</li> </ul>	C and D or F			
<p>3.10.2 The NRWS shall automatically re-initialise from an abnormal shutdown to full functionality in accordance with this TSOR in:</p> <ul style="list-style-type: none"> <li>c. less than 4 minutes, with the exception of the TIC; and</li> <li>d. less than 10 minutes, including the TIC.</li> </ul>	C and D or F			
3.10.4 The NRWS shall operate at a reduced level of performance in the event of a critical failure.	C and D			
3.10.5 The NRWS Built-In Test (BIT) shall automatically detect faults.	C and D			
<b>3.11 Onboard Trainer</b>				

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
3.11.1 If the NRWS has an onboard trainer, the onboard trainer shall be either appended or embedded to the NRWS.	C and D *if onboard trainer included			
3.11.6 If the NRWS has an onboard trainer, the onboard trainer shall include not less than 5 pre-programmed naval combat scenarios.	C and D *if onboard trainer included			
3.11.7 If the NRWS has an onboard trainer, the onboard trainer combat scenarios shall vary in level of complexity.	C and D *if onboard trainer included			
<b>4. PHYSICAL REQUIREMENTS</b>				
<b>4.1 Equipment</b>				
4.1.2 The NRWS shall provide a means to singly mount each of the following weapons in one weapon cradle:  a. FN M2 0.50 Calibre HMG; and  b. 7.62 millimetre C6 machine gun.	C and D			
4.1.4 The NRWS shall have a cover to protect functional components of the mounted weapon.	C and D			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
4.1.6 The NRWS shall have a means to align the EO sensor suite and the mounted weapon to a common reference point on the ship.	C and D			
4.1.7 The NRWS shall have a means to align the EO sensor suite and the mounted weapon to a common reference point at the maximum effective range of the NRWS.	C and D			
4.1.8 The NRWS EO sensor suite shall incorporate an Operator controlled jet wash system to clean any debris impeding functionality of the EO sensor suite optics.	C and D			
4.1.9 The NRWS EO sensor suite shall incorporate an Operator controlled de-icing system to melt any ice accumulation impeding functionality of the EO sensor suite.	C and D			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
4.1.17 The NRWS shall be at a technology readiness level of at least 8 in accordance with the Technical Readiness Assessment Guidance, Department of Defense.	C and D and bidder has provided the Supporting Information as defined in the Technology Readiness Assessment Guidance, DOD, April 2011			
<b>4.2 Range of Motion</b>				
4.2.1 Each NRWS mount shall traverse continuously clockwise and counter-clockwise for 360 degrees in azimuth	C and D or E or F			
4.2.2 Each NRWS mount shall elevate the weapon to a minimum of 55 degrees above the horizontal plane.	C and D or E or F			
4.2.3 Each NRWS mount shall depress the weapon to a minimum of 20 degrees below the horizontal plane.	C and D or E or F			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>6. SPECIALTY ENGINEERING REQUIREMENTS</b>				
<b>6.2 Availability</b>				
6.2.1 The NRWS shall have no less than 98% availability, 24 hours a day, seven days a week, throughout a deployed period of no less than 90 days considering the typical usage patterns as outlined table 3.	C and E or F			
6.2.2 The NRWS shall be available for no less than 250 days per calendar year.	C and E or F			
<b>6.3 Survivability</b>				
6.3.1 The NRWS shall withstand exposure to conditions up to and including Sea State 6 as defined in the WMO code tables and as described in Table 4.	C and D or E or F			
<b>6.4 Maintainability</b>				
6.4.1 The NRWS daily preventive maintenance shall be less than 30 minutes in total in a 24 hour period.	C and E or F			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
6.4.3 The NRWS MTTR shall be less than 1 hour for corrective maintenance repair functions which includes combined diagnostic and LRU replacement time but does not include time associated with provisioning the LRU.	C and E or F			
<b>7. ENVIRONMENTAL REQUIREMENTS</b>				
<b>7.1 Ship's Motion and Sea State</b>				
7.1.1 The NRWS shall operate while the ship has a permanent list within the range of -20 to +20 degrees.	C and D or E or F			
7.1.2 The NRWS shall operate while the ship has a permanent trim of 5 degrees.	C and D or E or F			
7.1.3 The NRWS shall operate while the ship is rolling within the range of -40 to +40 degrees.	C and E or F			
7.1.4 The NRWS above deck equipment shall operate in accordance with this TSOR after immersion in a mean green water load of 42 kilopascals.	C and E or F			
7.1.5 The NRWS shall operate in conditions up to and including Sea State 5 as defined in the WMO code tables and as described in Table 4.	C and E or F			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
<b>7.2 Mechanical Shock</b>				
7.2.3 The NRWS equipment shall operate in accordance with this TSOR following exposure to shock conditions specified in D-03-003-007/SF-000 Grade 1 Type A, Section 6.	C and E or F			
<b>7.3 Vibration</b>				
7.3.2 The NRWS equipment shall operate in accordance with this TSOR when excited by Type 1 environmental vibration levels up to and including 33Hz as specified in MIL-STD-810G, method 528.1.	C and E or F			
<b>7.5 Temperature, Humidity, and Solar Radiation</b>				
7.5.1 The NRWS equipment not exposed to the weather shall operate in accordance with this TSOR in temperatures ranging from 0 to 40 degrees Celsius.	C and D or F			
7.5.2 The NRWS equipment exposed to the weather shall operate in accordance with this TSOR in temperatures ranging from -32 to 40 degrees Celsius.	C and D or F			
7.5.4 The NRWS equipment shall operate in accordance with this TSOR in 95% humidity condensing environment.	C and D or F			



Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
7.5.5 The NRWS equipment exposed to the weather shall operate in accordance with this TSOR when exposed to the solar environment described in MIL-STD-810G, method 505.6 Procedure II.	C and D			
<b>7.6 Wind</b>				
7.6.1 The NRWS equipment exposed to the weather shall operate in accordance with this TSOR under the sustained winds, plus gusts as described in STANAG 2895 Table 26.	C and D			
<b>7.7 Rainfall, Dust, and Spray</b>				
7.7.1 The NRWS equipment exposed to the weather shall operate in accordance with this TSOR under rainfall conditions of 0.8 millimetres per minute.	C and D or F			
7.7.2 The NRWS equipment exposed to the weather shall operate in accordance with this TSOR under dust concentrations of 1gram per cubic metre.	C and D or F			
7.7.4 The NRWS electrical equipment exposed to the weather shall be watertight, spray tight, and dust proof in accordance with MIL-STD-108E.	C and D			
<b>7.8 Ice</b>				

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
7.8.1 The NRWS equipment exposed to the weather shall operate in accordance with this TSOR when subjected to conditions which produce icing loads of up to and including 20 kilograms per square metre.	C and E or F			
7.8.2 The NRWS equipment exposed to the weather shall not be damaged by an icing load of up to and including 37 kilograms per square metre except as otherwise specified in TSOR requirement 7.8.3.	C and E or F			
7.8.3 The NRWS equipment exposed to the weather shall not be damaged by an icing load of up to and including 180 kilograms per square metre if located in the forward one-third of the ship and below a line parallel to and 12.2 metres above the Halifax Class vessels design waterline.	C and E or F			
<b>7.9 Corrosion and Salt Fog</b>				
7.9.1 The NRWS above deck components shall be constructed from galvanic compatible materials.	C and D			
7.9.2 The NRWS above deck components exposed to the weather shall be constructed from materials with surface treatments in order to preclude failure due to oxidation and corrosion.	C and D			

Table 2 – Mandatory TSOR Requirements				
TSOR Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No
7.9.4 The NRWS shall be resistant to the effects of salt deposits on the physical aspects of materiel when subjected to the test described in method 509.6 of MIL-STD-810G.	C and D			
7.9.5 The NRWS shall be resistant to the effects of salt deposits on the electrical aspects of materiel when subjected to the test described in method 509.6 of MIL-STD-810G.	C and D			
<b>8. SUPPORTABILITY</b>				
8.1 The NRWS shall have an operational life expectancy of not less than 15 years.	C and D or E			
8.2 The NRWS shall accommodate the facilitation of new technologies, including, but not limited to, the upgrade of individual sensors, without having to replace other components.	C and D			
8.3 The NRWS hardware architecture shall be an open architecture format.	C and D			

Table 3 – Mandatory Computer Based Trainer Specification Requirements				
Computer Based Trainer Specification Requirement	Compliance Method	Bidder's Response	Compliant	
			Yes	No

<b>Table 3 – Mandatory Computer Based Trainer Specification Requirements</b>				
<b>Computer Based Trainer Specification Requirement</b>	<b>Compliance Method</b>	<b>Bidder's Response</b>	<b>Compliant</b>	
			<b>Yes</b>	<b>No</b>
<b>2. TECHNICAL REQUIREMENTS</b>				
<b>2.1 General Requirements</b>				
2.1.1 The Computer Based Trainer shall have an Operator Trainer Mode.	C			
2.1.2 The Computer Based Trainer shall have an Instructor Trainer Mode.	C			
2.1.3 The Computer Based Trainer shall operate in either the Operator Trainer Mode or the Instructor Trainer Mode as selected by the user.	C			
2.1.4 The Computer Based Trainer Controls shall have a Physical Fidelity level of not less than 4 in accordance with Table 1, to this Appendix.	C and D			
2.1.5 The Computer Based Trainer Display shall have a Physical Fidelity level of not less than 3 in accordance with Table 1, to this Appendix.	C and D			
2.1.6 The Computer Based Trainer Software shall have a Functional Fidelity level of not less than 4 in accordance with Table 2, to this Appendix.	C and D			

<b>Table 3 – Mandatory Computer Based Trainer Specification Requirements</b>				
<b>Computer Based Trainer Specification Requirement</b>	<b>Compliance Method</b>	<b>Bidder's Response</b>	<b>Compliant</b>	
			<b>Yes</b>	<b>No</b>
2.1.7 The Computer Based Trainer shall include not less than 10 pre-programmed Combat Scenarios.	C and D			
<b>2.2 Combat Scenarios</b>				
2.2.1 The Combat Scenarios shall vary in levels of complexity.	C and D			
2.2.2 The Combat Scenarios shall simulate each threat and target types as specified in the NRWS System TSOR, Tables 1 and 2 of Annex B, Appendix 3.	C			
<b>2.4 Instructor Trainer Mode</b>				
2.4.1 The Instructor Trainer Mode shall allow the instructor to create Combat Scenarios.	C and D			
2.4.2 The Instructor Trainer Mode shall allow the instructor to edit Combat Scenarios including environment conditions and marine operating areas as defined in section 2.2 of this Specification.	C and D			