

**Volume 3, Annex B, Appendix 6**

**Performance Work Statement (In-service Support)**  
**Performance Requirements Specification**

**Underwater Warfare Suite Upgrade**

**02 March 2017**

### History of Revisions

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>RDIMS</b>
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## 1. Introduction

### 1.1. Forward

1.1.1. The purpose of the Performance Requirement Specification (PRS) is to provide a detailed description of the performance measures used in the Underwater Warfare Suite Upgrade (UWSU) In-Service Support Contract (ISSC) as both a baseline guide and a starting point for the Contractor and Canada to determine a working agreed performance monitoring solution. The agreed PRS solution will be implemented and enforced during the transition sub phase of the ISS contract for testing and evaluation purposes only. It will continue into the steady state phase, at which time the performance bonuses awards become applicable and will then remain in effect for the duration of the ISSC.

1.1.2. The success of the UWSU ISSC will depend largely on the functional capabilities of the Underwater Warfare Sensor Suite Equipment Group (UWSS EG) being maintained technically operational and mission reliable during the full operational cycle of each respective *Halifax*-class Frigate that the UWSU Equipment's are installed on. In accordance with Annex B, Performance Work Statement, the Selected Contractor must provide:

- i. Life Cycle Material Management Support Services. The ISS services related to managing DND/industry UWSU ISS as an integrated whole and linking UWSU ISS into higher level *Halifax*-class ISS and MEPM business management;
- ii. Technical Schedule Management Services. The ISS Services related to maintaining a schedule of unit and facility maintenance and engineering activities related to the ISSC;
- iii. Engineering Support Services. The ISS engineering services related to trouble shooting, specification development, engineering analysis and design, technical risk assessments, Business Case Analysis, technical advice and engineering support to installations, tests and trials;
- iv. Production Maintenance Support Services. The ISS services related to the conduct of preventive and corrective maintenance, capability insertion, set-to-work, tests and trials.
- v. Material Management Support Services. The ISS services related to inventory management, materiel procurement, warehousing, distribution, repair and overhaul, and disposal;
- vi. Training Support Services. The ISS services related to regenerative training delivery and update, and support to training aids; and
- vii. Electronic Information Management Services. The ISS services related to data management/update, data sharing and data exchanges within a future UWSU Electronic Information Environment.

1.1.3. A major component of the ISSC strategy will be to align and integrate the ISSC into a working Naval Enterprise where Ships Staff, Fleet Maintenance Facility Personnel and the ISS Contractor will each play significant combined roles in sustaining the UWSS EG capabilities for the duration of the in-service life of the *Halifax*-class Frigates.

1.1.4. The UWSU PRS lays out the initial performance specifications as a guide to the set of performance measures that will be agreed upon by both the Contractor and Canada. These performance measures include their respective performance requirements, standards and objectives that will be performed. This includes source performance data collection, analysis, reporting, how each performance measure will be assessed and how the assessed data will be rated and used for contractual monitoring purposes. The resulting and agreed to PRS will be aligned to both the performance management framework guidelines as found in the PWS and to the contractor's Performance Management Plan. The PRS and its associated performance measures will be reviewed annually and reconciled annually and as deemed necessary and agreed to by both Canada and the Contractor.

1.1.5. A fully approved PRS must be agreed to by both Canada and the Contractor and be in place when the contractor achieves Steady State ISS Service Delivery iaw DID-SSS-001. The approved PRS is a mandatory requirement to conduct performance monitoring assessments, make reports and to request contract performance payments.

## **2. Performance Monitoring and Assessment**

### **2.1. Performance Monitoring, Analysis and Review**

2.1.1. The UWSU ISSC performance management framework (PMF) and all associated performance reviews and reports will be monitored closely by the DND Equipment Management Team (EMT) in direct conjunction with the Contractor. The activities related to the Performance Monitoring, Analysis and Review will be ongoing for the duration of the ISSC and will require annual review and evaluation of the ISSC services and management activities. This document serves as the primary link between the PWS defined services and the incentive payment for performance system defined in this performance requirements specification.

2.1.2. The UWSU EMT will review and evaluate the UWSS EG performance in accordance with the performance measures and indicators that have been agreed to in the PRS. The UWSU EMT will review the effectiveness of: the performance management framework, the individual performance measures and the contractor's performance measurement system.

2.1.3. The UWSU EMT will then report on the successes and areas of concern in relation to:

- a. The UWSS EG system performance;
- b. The ISSC Management performance; and
- c. The overall effectiveness of the ISSC Management System.

### **2.2. Performance Measures Assigned to the UWSU ISSC**

2.2.1. The UWSU Performance Management Framework as defined in section 9.3 of the UWSU PWS lists the performance measures and indicator that the PRS will be initially based on. These measures are structured into three main types and are further defined below:

- a. **Strategic Performance Measures (SPM):** these are annually assessed, typically used to reflect the long term behaviours against performance requirements and are qualitative in nature. SPMs are designed to focus on strategic outcomes, long-term behaviour, alignment of interests and benefits to both Canada and the Contractor. The intent of SPMs is to provide strategic overview at the executive management level with the overall performance assessed in areas of: Available System, Maintenance and Supply Targets Achieved, Improving Performance, Industry Technical Benefit and Value Proposition (ITB&VP) and Timely and Accurate Data. SPMs are assessed and reported annually to the UWSU EMT. SPMs have no related performance payment. A rating of ‘Satisfactory’ for the SPMs will be a decision making criteria for Canada to award one or more contract option years in accordance with the terms and conditions of the contract;
- b. **Key Performance Indicators (KPI):** these are periodically assessed and typically used to measure the Contractor’s capability and capacity to provide Life Cycle Materiel Management (LCMM), Technical Schedule Management (TSM), and Services Delivery (SD) activities. KPIs are initially designed to focus on Scheduled System Availability, ISSC Support System Services and Effective Knowledge Management and may amended to address any specific problem areas that may arise during the life of the ISSC. The intent of KPIs is to provide a quantitative performance assessment of the Contractor commitment and ability to deliver an affordable and effective Maintenance program which meets the requirements of the approved Annual Operating Plan (AOP). KPIs are assessed quarterly and reported annually to the UWSU EMT. KPIs will be aggregated into a single Composite Performance Score (CPS). A rating of ‘Satisfactory’ for the CPS will be a decision making criteria for Canada to award an incentive performance payment incentive as defined within the terms and conditions of the contract; and
- c. **System Health Indicators (SHI):** these are periodically assessed and typically used to provide Canada with greater insight and confidence on the Contractor’s capability and capacity in specific Program Management or Life Cycle Management areas. The Performance Requirement Statement (PRS) SHIs are designed to focus on specific activities which are: Mission Diminished Operations, Critical Failures, Mean Time Between Critical Failures (MTBCF), Corrective Maintenance Actions and Quality, Top 10 Reliability Drivers, Reliability Improvement, Preventive Maintenance Compliance and Top 10 Stock-out items. The intent of SHIs is to provide early indication of potential problems associated with Life Cycle Materiel Management (LCMM), Technical Schedule Management (TSM) and Services Delivery (SD) activities. SHIs are assessed monthly and reported quarterly to the UWSU EMT. SHIs are provided as general indicators as to the health of the ISSC and are not related to performance payments.

### 2.3. UWSU Performance Measures Description

PM Indicator	Performance Measure (PM)	Related PWS References
<b>Strategic Performance Measure - Assessed and Reported Annually</b>		
SPM-1	Available System	Chap 9.3.6
SPM-2	Maintenance and Supply Targets Achieved	Chap 6.3; 9.3.6
SPM-3	Improving Performance	Chap 1.6.6; 2.1; 9.3.6;
SPM-4	Industry Technical Benefit and Value Proposition (ITB&VP)	9.3.6 Vol3 Annex F.
SPM-5	Timely and Accurate Data	Chap 6.9; 9.3.6;
<b>Key Performance Indicator - Assessed Quarterly and Reported Annually</b>		
KPI- 1	Scheduled System Availability	Chap 1.6.1; TSM Chap 4, 9.3.7
KPI-2	ISSC Support System Services	Chap 5; 9.3.7
KPI-3	Effective Knowledge Management	Chap 3.1.6; 9.3.7
<b>System Health Indicator - Assessed Monthly and Reported Quarterly</b>		
SHI-1	Mission Diminished Operations	Chap 1.4; 1.6; 3.14.1; 9.3.8
SHI-2	Critical Failures	Chap 9.3.8; 9.7.1
SHI-3	Mean Time Between Critical Failures (MTBCF)	Chap 9.3.8; 9.7.1
SHI-4	Corrective Maintenance Actions and Quality	Chap 9.3.8; 5.1.3; 5.3; 6.3.2; 9.7.1
SHI-5	Top 10 Reliability Drivers	Chap 9.3.8; 9.7.1
SHI-6	Reliability Improvement	Chap 9.3.8; 9.7.1
SHI-7	Preventive Maintenance Compliance	Chap 9.3.8; 9.7.1
SHI-8	Top 10 Stock Out Items	Chap 9.3.8; 9.7.1

**Table 1 – UWSU Performance Measures Description**

## **2.4. UWSU Performance Standards**

2.4.1. For the UWSU PRS and for the purposes of determining the Adjusted Performance Scores, The Measured Performance levels required are described as follows:

- a. Measured Performance Required (MPReq). The MPReq is specified as the desired Performance Level that the Contractor will be required to strive towards for a given performance measure (SPM, KPI, SHI);
- b. Measured Performance Minimum (MPMin). The MPMin is specified as the minimum Performance Standards that the Contractor must Achieve and are mandatory for the Contract; and
- c. Measured Performance Value (MPValue). The MPValue is specified as the resulting performance score for each performance measure, as measured by the PfMS. The MPValue is averaged over the quarterly or annual performance reporting period and are rated against the MPReq and MPMin as illustrated in Figure 1.

2.4.2. For the KPIs, the APS values are used for determining the Composite Performance Scores for basis of payment and for contract tenure. For the SPMs and SHIs, the APS values attained are provided for reporting purposes and are an indicator as to the overall health of the ISSC.

## **2.5. UWSU SPM Evaluation and Reporting**

2.5.1. The Strategic Performance Measures provide Canada with a strategic annual review of the performance provided by the Contractor for In-Service Support activities based on the set of SPMs being monitored. Each SPM provides objective measures that the Contractor's Performance is measured and reported against annually. These are used to evaluate the effectiveness of the ISSC annually in respect to specific Strategic Objective outcomes.

2.5.2. The SPMs are monitored, recorded and tracked by the PfMS and are calculated and averaged annually. They are measured and reported in a similar fashion as per the KPIs shown in Figure 1 but are provided for reporting purposes only. Their reports are used for performance improvement and to indicate the status and level of efforts associated with their reported aspects. SPM are used to represent and report issues that are of strategic importance to the ISSC and to monitor the strategic outcomes of the ISSC.

## **2.6. UWSU KPIs and the Composite Performance Scoring System**

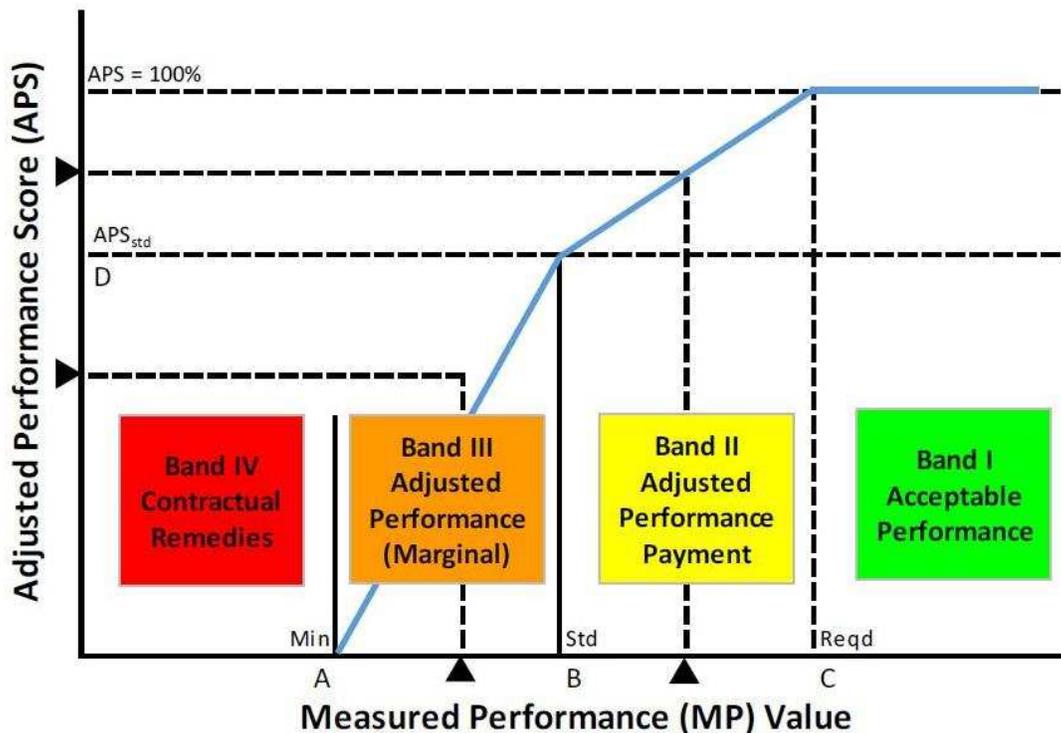
2.6.1. The Key Performance Indicators are the primary method to measure performance for the application of incentive payments. Initially, they will be used to measure performance with respect to the following outcomes:

- a. Scheduled System Availability, ready to start and fully complete missions when requested within all regulatory standards;
- b. ISSC Support System providing effective and efficient services, fully meeting support demands and sustainment engineering, within budget constraints; and

- c. Effective Knowledge Management providing accurate information for decision making and event recording.

2.6.2. The Measured Performance (MP) for a KPI is to be calculated on a quarterly basis and include a measurement period of the previous 12 months. For the basis of payment, the quarterly measure encapsulating the calendar year will be used. For the MP measure encapsulating the calendar year, an Adjusted Performance Score (APS) shall be calculated that will be used to influence payment. This score is based on set points that determine ‘bands’ in which the APS will fall. The APS Bands are defined as follows:

- a. Band I: The Contractor performance has fully met the required objectives of level (C) and receives full Incentive payment (100%);
- b. Band II: The Contractor performance is above the standard performance level (B) but below the desired required level (C) and receives an adjusted performance Incentive payment;
- c. Band III: The Contractor performance is above the minimum value (A) but below the standard level (B) and receives an adjusted marginal performance Incentive payment; and
- d. Band IV: The Contractor performance is equal to or worse than minimum level and therefore the Contractor receives no performance Incentive payment.



**Figure 1 – Determining the Performance Incentive Payout in relation to the MP Standards**

2.6.3. Each KPI is described individually in section 5 with its own relevant set of MP values. The calculation equations for the set point performance incentive payouts, where the set points are represented as letters A, B, C or D as shown in Figure 1. For improving performance represented as an increasing value, the following calculations are used:

APS Score Calculations		
$MP \geq C$	Band I	$APS = 100\%$
$B \leq MP < C$	Band II	$APS = (MP - B) \times (100 - D) / (C - B) + D$
$A \leq MP < B$	Band III	$APS = (MP - A) \times (D - 0) / (B - A)$
$MP \leq A$	Band IV	$APS = 0\%$

**Table 2 – APS Resulting Score Calculations**

2.6.4. The APS for each KPI will then be averaged into a Combined Performance Score (CPS) that will be used for assessing both the weighted performance incentive payment amount and as the key factor determining the Contract Renewal Option Year Award as determined by Canada. A CPS score of below satisfactory would result in no performance incentive payment regardless of whether the Contractor achieved a high APS in only one or two KPI outcomes.

2.6.5. The combined CPS would be an averaged score where each APS would be weight averaged based on its rating between the minimum and maximum scores; I.E. for KPI-1 the weighted APS would be weight averaged against the resulting APS where; an APS of 94% would be %50 weighted; an APS of 97% would be 75% weighted; an APS of 100% would be 100% weighted and an APS below 94% would receive no score. The resulting CPS would be the weighted resulting APS, for each KPI being monitored, added and then divided by the number of KPIs being monitored.

## 2.7. Contract Performance Payment

2.7.1. At the point that the ISSC achieves steady state, the Contract Performance Incentive Payment will be based on the Performance Incentive amounts as set forth in the contract. The performance incentive payment amount will be divided by the number of KPIs being monitored for that performance year and will be awarded for each KPI achieving an award APS score.

2.7.2. A satisfactory CPS of 60% or better for the combined KPI scores must be achieved as a minimum for any KPI performance award.

2.7.3. After transition of the ISSC into steady state, an unsatisfactory annual CPS determination could result in forfeiture of the annual option year renewal, resulting in contract termination. This PRS will be reviewed and amended annually to validate and adjust KPI scores and objectives of the performance based incentives and to target specific areas for improvement as necessary.

2.7.4. Actual incentive payments are anticipated to begin in the current fiscal year that Canada and the Contractor have declared and achieved steady state contract Status and in accordance with DID-SSS-001 and the terms and conditions of the contract. Incentive payments, subject to achieving a satisfactory annual CPS, would be awarded annually from that point forward and for the duration of the contract.

## **2.8. UWSU SHI Evaluation and Reporting**

2.8.1. The System Health Indicators are used to monitor failures and delays to system maintainability, support activities and SHI indicators. SHIs provide overall indication of where problems in the ISSC process are occurring, are commonly occurring and where they may occur in the future. The SHI reports are to be provided by the PfMS to all stakeholders for review and to identify problem areas, to implement solutions and to record best practices.

2.8.2. The SHIs are tracked by the PfMS and are recorded, tracked and calculated on an individual basis based on their individual SHI Section requirements. SHIs are reported on quarterly and annually and as required, to provide an overall picture of the health of the ISSC and to aid in performance improvement of the ISSC and the SHI monitored activities.

## **3. Performance Management Relational Charter**

### **3.1. Relational Charter**

3.1.1. As part of the Performance Management program, the Contractor and Canada must manage relationships such that there is a collaborative and effective working relationship which achieves mutually successful outcomes and delivers sustained value to both parties over the long term. Canada and the Contractor will jointly develop a Performance Management Relational Charter that will outline common goals, desired behaviours, joint governance, and collaborative processes.

3.1.2. Throughout the duration of the contract and through mutual agreement between Canada and the Contractor, the Relational Charter is expected to evolve to better achieve the UWSS EG objectives and lead to better performance management outcomes.

3.1.3. The Relational Charter describes common goals, desired behaviours, and joint governance. It will include a series of mutually agreed upon processes to increase collaboration. It is through effective collaboration that a work environment that engenders trust, promotes innovation and develops a process to establish best practices.

### **3.2. Performance Management Framework (PMF)**

3.2.1. The purpose of the PMF is to instil an integrated equipment systems management approach that is performance oriented and outcome focused. The emphasis of the PMF is to establish and validate

the performance measures, data collection, and implementation of data analysis to support SPMs, KPIs and SHIs. This will ensure that these indicators accurately reflect performance and allow for Canada and the Contractor to agree that they can be applied for the purpose of contract incentives.

3.2.2. The PMF must remain flexible and amendable in order to accommodate any necessary changes to the performance assessment process or the performance measures. These changes will derive from Performance Assessment and Adjustment Reviews. Any and all changes to the Performance Management Framework or to this Performance Requirements Specification must be fully agreed to by Canada and the Contractor. Refer to Section 9.3 of the PWS for further reference to the PMF.

3.2.3. The Contractor and Canada must establish a Performance Measurement System (PfMS) that includes both Contractor and Canada representatives to conduct and validate all performance measurement recording, analysis and reviews and iaw the contract and this PRS.

### **3.3. Performance Management Review and Update**

3.3.1. The PfMS representatives will annually review and report to stakeholders:

- a. the effectiveness of the performance measures and Performance Measurement System (PfMS) reporting tool;
- b. the periodicity of when the performance monitoring, measuring and reporting must be performed;
- c. the effectiveness of the performance requirement specification and determine and recommend amendments to the PRS as deemed necessary; and
- d. the effectiveness and performance of the ISSC management system including the UWSS EG performance, ISS financial and non-financial Management Performance and the effectiveness of the ISSC Management System.

## **4. SPMs Detailed Descriptions**

### **4.1. SPM-1 Available System**

4.1.1. The Available System Performance Measure relates directly to the Key Performance Indicator KPI-1 where the scheduled system availability is the key factor in assessing the Available System Strategic Performance Measure. For SPM-1, the overall availability of the UWSS EG equipment and systems are monitored and measured and reported to assess the annual availability and condition related behaviours of the UWSS EG.

4.1.2. Not only are the Contractor's system failure OPDEFs being reported but the complete system availability picture is also being monitored and reported on by Ship's Staff, the PfMS and the DND EMT. This complete system availability picture includes a review of:

- a. System outages caused by other equipment or ship way failures that impact the operational status of the UWSS EG;

- b. Ship’s staff or other agency caused failures of the equipment;
- c. All scheduled or un-scheduled system outages for maintenance, repairs, upgrades or other servicing requirements;
- d. Outages caused by other non UWSS EG equipment systems activities; and
- e. Contractor OPDEF Failures to include system faults, maintenance errors or faults and material stock out issues affecting or preventing operational performance of the UWSS EG.

4.1.3. The PfMS must record and assemble the data requirements related to any and all outages for the UWSS EG and shall provide a system analysis as to the overall strategic availability of the equipment. The following calculations must be used:

$$\text{System Scheduled Availability; ASch} = (\# \text{Avail Days} / \# \text{RCN Days}) \times 100$$

$$\text{Total Number of Outage days OutD} = (\# \text{UnAvail days} / \text{RCN Days}) \times 100$$

$$\text{Contractor Outage Days COut} = (\# \text{COut days} / \text{RCN days}) \times 100$$

Where:

RCN days is the planned scheduled available days in the current Fiscal Year where the *Halifax*-class will be capable of completing a 180-day operational deployment on a mission of up to 90 day operational period at sea with tasks performed continuously 24 hours per day. A *Halifax*-class frigate and all its systems, including the UWSS EG, could be deployed up to 250 days per year in various readiness states.

4.1.4. Scheduled availability targets are as shown in the following table:

Measurement Point	Value
<b>A – Minimum Availability</b>	<b>90%</b>
<b>B - Standard Availability to be above</b>	<b>97%</b>
<b>C – Required Availability</b>	<b>100%</b>
<b>D – Standard APS</b>	<b>90%</b>

**Table 3 – SPM-1 Scheduled Availability Targets**

4.1.5. The results of this SPM are to be provided in an annual report that contains the assessment results of the system availability and downtime and the causes and types of outages that occurred during the previous reporting year and any proposed corrective actions and conclusions.

## **4.2. SPM-2 Maintenance and Supply Targets Achieved**

4.2.1. Achievement of the UWSU ISSC Maintenance and Supply Targets is the fundamental and core strategic performance measure that relates to the Contractor’s capacity to plan all the maintenance

work scheduled into the Annual Operating Plan (AOP) and to provide the necessary onboard spares and maintenance parts that may be required by the *Halifax*-class Frigates throughout their annual operating cycle.

4.2.2. This SPM is assessed in two parts:

- a. Maintenance Targets Achieved. This measures the Contractor's ability to schedule and deliver high quality maintenance services on time and on budget to each platform; and
- b. Supply Targets Achieved. This measures the Contractor's ability to satisfy and deliver customer demands with a successful high satisfaction rate in relation to demand priorities.

4.2.3. **Performance Determinations:**

4.2.4. The PfMS must determine the level of performance as follows:

- a. For Completion of Maintenance Targets on Time:
  - i. The Measured Performance Required (MPReq): is for zero (0) instances of late completion of maintenance services delivery or incomplete work delivered;
  - ii. Measured Performance Minimum (MPMin): is for less than < seven (7) instances of late completion of maintenance services delivery or incomplete work delivered; and
  - iii. As measured in the Contractor's ability to schedule and delivery the maintenance activities on time to each platform. Measured as a percentage of late or incomplete work packages to scheduling or deployment or workload issues.
- b. For High Quality Completion of Maintenance Targets:
  - i. Measured Performance Required (MPReq): One hundred (100) percent of approved work orders to be completed at delivery with zero (0) defects;
  - ii. Measured Performance Minimum (MPMin): Ninety (90) percent of approved work orders to be completed at delivery with less than seven < 7 defects; and
  - iii. As measured as the Contractor's ability to complete the entire scope, entire work package item with zero defects or warranty claims.
- c. For Cost Constraints of Maintenance Targets:
  - i. Measured Performance Required (MPReq): zero (0) percent cost growth on completion of the maintenance work package items;
  - ii. Measured Performance Minimum (MPMin): Less than < five (5) percent cost growth on completion of the work package items; and
  - iii. As measured as the Contractor's ability to perform scheduled work at the agreed and scheduled cost without overages and is measured as planned versus actuals costs for a work package items.
- d. For Supply Targets Achieved:
  - i. Measured Performance Required (MPReq): 100 percent (%) of all ship and shore facility demands are satisfied;

- ii. Measured Performance Minimum (MPMin): 95 percent (%) of all ship staff demands are satisfied; and
- iii. As measured as a percentage, the number of Contractor satisfied demands compared with all demands of all priorities (Routine, Urgent and Critical). The PfMS must calculate DSR performance in relation to the total number of demands raised and in comparison to the total number of demands of each priority.

Where:

$$SPM = \frac{\#Preq - \#PDelivered}{\#Preq} \times 100$$

### 4.3. SPM-3 Improving Performance

- 4.3.1. The Improving Performance Strategic Performance Measure monitors the Contractor’s efforts and achievements in conducting value engineering, costs savings, performance and procedural review activities that are aimed at, and provide performance improvement results to the ISSC.
- 4.3.2. The intent of this SPM is to provide ongoing efforts to improve products, service and processes in order to further improve the availability of the UWSS EG over and above the levels actually being achieved under the ISSC and towards an ideal goal of 100% availability of the UWSS EG while improving cost efficiency.

#### 4.3.3. Performance Standard

- 4.3.4. The Contractor will be rated based on a straight assessment of the number of successfully achieved results from the number of each type of activity conducted and reported on. On an annual basis, the Contractor is required to provide a copy of all the Improving performance reports, initiatives and outcomes to the PfMS as part of the assessment and review process. The PfMS will evaluate the Contractor’s Performance and complete Table 4, provided below.

IMPROVING PERFORMANCE	PERFORMANCE IMPROVEMENT RESULTS	REMARKS
Value Engineering		
Cost Savings Reviews		
Performance Reviews		
Procedural/Efficiency Reviews		

Overall Assessment	Yes/No [Comply, Meet Expectation]	
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**Table 4 - Improving Performance Assessment**

**4.4. SPM-4 Industry Technical Benefit and Value Proposition (ITB&VP)**

4.4.1. This Strategic Performance Measure represents the Contractor compliance against the ITB commitments including VP commitments. The scope of the ITB/VP measurement will include the commitments and transactions in the following VP areas:

- a. Defence Sector;
- b. Supplier Development; and
- c. Research and Development (R&D).

4.4.2. **Performance Objective.** The objective of this SPM is to assess the Contractor’s VP commitments that the Contractor must achieve and maintain. At least seventy-five percent (75%) of the VP commitments (Defence Sector, Supplier Development, Research and Development) must be maintained throughout the first 15 years of the ISSC. The VP commitments may reduce at 5% per year for each fiscal year the contract remains in effect until it closes at the 20 year point or is renewed. The ITB&VP minimum commitments must be renegotiated again at that point.

**4.4.3. Calculation Method**

4.4.4. The calculation of the Contractor’s level of ITB&VP performance will be a straight assessment of the achievement of ITB credits against the VP commitments, according to the ITB Terms and Conditions (Vol 3 Annex F). On an annual basis, the Contractor is required to submit an ITB annual report describing ITB claims, new transactions, updates to ITB plans and associated ITB program progress. The ITB authority verifies the ITB claims and provides notice of credit achieved to the Contractor according to the ITB Terms and Conditions.

Where:

- a. **Measured Performance Required (MPReq):** ITB credits achieved in the VP commitments at the above prescribed tranches, by way of submitted ITB transactions, measured in Canadian Content Value (CCV);
- b. **Measured Performance Minimum (MPMin):** Identification of VP transactions to achieve the above prescribed commitment levels, measured in Canadian Content Value (CCV); and
- c. Canada will monitor the compliance to the approved ITB/VP plan using the ITB/VP Annual Progress Report submitted to Canada annually.

4.4.5. The following ITB&VP table will be used to assess both the qualitative and quantitative ITB annual report provided by the Contractor:

AREA	QUALITATIVE: On Track to Meet Plan	QUANTITATIVE: ITB&VP Credit Earned versus Commitments	REMARKS
Defence Sector			
Supplier Development			
Research & Development			
Overall Assessment	Yes/No [Comply, Meet Expectation]	Yes/No [Comply, Meet Expectation]	

**Table 5 - ITB &VP Level of Performance Assessment**

4.5. **SPM-5 Timely and Accurate Data** This Performance Measure represents the delivery of Timely and Accurate Technical Data (e.g. data, drawings, TDP, FSR/MRP support) in the form of updates and delivery of new data and in the UWSU ISSC Technical Data Management systems’ effectiveness in responding to requests and how efficiently those requests were handled.

4.5.2. This will be accomplished in the UWSU ISSC by diligently monitoring technical data deliverables for quality completeness and accuracy of data, drawings and reports to ensure their timely, high quality delivery. This Performance Measure is conducted, assessed and reported in order to provide a fair indication of the quality and efficiency of the technical data services provided in the ISSC.

4.5.3. Performance Standard. The performance Measurement Standards for this SPM are:

- a. *Measured Performance Required (MPReq)*: respond to one hundred percent (100%) of the Technical Data Requests and provide a high quality, error free data item as per assigned priority response time before the end of the Government Fiscal Year, which end 31 March; and
- b. *Measured Performance Minimum (MPMin)*: respond to ninety percent (90%) of the Technical Data Requests and provide a high quality, error free data item as per assigned priority response time before the end of the Government Fiscal Year, which end 31 March.

4.5.4. Calculations:

$$\text{SPM Value} = [\text{Technical Data Delivered Satisfactorily}] / [\text{Technical Data Requested}]$$

## 5. KPIs Detailed Descriptions

### 5.1. KPI 1 Scheduled System Availability

5.1.1. The Scheduled System Availability (ASch) measures each of the UWSS EG systems’ availability against the *Halifax*-class Annual Operational Plan. ASch is a function of the inherent reliability and

maintainability of the system design, the support system in effect, and the availability of the required resources (capable maintenance personnel, support and test equipment, technical data, parts availability, information systems, and infrastructure).

5.1.2. An ASch will be measured separately for each of the six UWSS EG supported systems listed below:

- a. Towed Active/Passive Sonar System (TAPSS);
- b. Hull Mounted Sonar (HMS) System;
- c. Sonobuoy Processing System (SPS);
- d. Torpedo Sonar Intercept and Classification (TORSIC) system;
- e. Own ship Noise Monitoring (ONM) system; and
- f. Onboard Trainer (OBT) System.

5.1.3. The Contractor will be committed to achieving an ASch of at least 97% for each of the supported systems measured over a calendar year; Where operational time would be rated as follows:

- a. Achieving an ASch 100% equating to 0 operational days lost;
- b. Achieving an ASch of 97% to 100% equates to between 1 to 7 lost operational days per 250 operational days availability. This would result in a marginal adjusted performance payment;
- c. Achieving an ASch of between 94% and 96.999% equates to between 8 to 14 lost operational days per 250 operational days availability. This would result in an adjusted marginal performance payment; and
- d. Achieving an ASch of below 93.999 equates to more than 14 days lost operational days per 250 operational days availability. This would result in no annual performance payment.

5.1.4. The ASch Systems would be averaged into the complete platform system availability or support ASch to determine the average of the all the operationally UWSU upgrade fitted *Halifax*-class Frigates available during the annual year. The support ASch must be calculated for each platform and then averaged into a resulting Adjusted Performance Score.

5.1.5. Resulting operational time lost due to other equipment or platform issues would not be reflected in the performance scoring.

#### 5.1.6. **Calculation Method**

5.1.7. The Performance Measurement System (PfMS) must calculate the UWSS EG system ASch for each calendar year using the following equation:

$$A_{Sch\ i} = \left(1 - \frac{\sum (OPDEF\_Days)_i}{\sum_{N} RCN\ Days}\right) \times 100$$

Where:

- i is the ith UWSS EG system.
- N is the number of active or serviceable *Halifax*-class ships in the fleet that are UWSS EG Equipped.
- OPDEF\_Days are the total number of days where the UWSS EG was not serviceable during RCN Operational Days.
- RCN Days are the total number of days the UWSS EG equipped *Halifax*-class Frigates were scheduled as active or serviceable in the current Fiscal Year.
- OPDEF Days are to include all Maintenance Failure reports including from Non-Operational Platforms, UCRs, Trials Failure reports and any other system failures that are deemed applicable by the PfMS.

#### 5.1.8. Business Rules and Conditions

5.1.9. The Contractor must apply the following rules for calculating the UWSS EG, ASch:

- a. All Materiel OPDEFs caused by work performed by DND technician or management decision, and not related to work performed by the Contractor are excluded from the calculation of OPDEF Days;
- b. OPDEF Day counting must be initiated from the date time group indicated in the initial Materiel OPDEF message and continue during the time that any one or more of the UWSS EG systems, per ship, remains in any category of Materiel OPDEF, and until rectified by notification of a Materiel OPDEF Rectification message;
- c. Should multiple Materiel OPDEFs apply to one or more than one of the UWSS EG systems, per ship, on a particular day, only one OPDEF Day must be counted based on the severest category of Materiel OPDEF in effect. Counting continues in this manner until the last Materiel OPDEF is rectified;
- d. OPDEF Days will not be counted during scheduled work periods, such as designated maintenance periods or docking work periods to conduct the work and selected test and trials. Should an outstanding Materiel OPDEF not be rectified during the scheduled work period, the OPDEF Days associated with this Materiel OPDEF must continue to count after the conclusion of the scheduled work period and commencement of RCN Days; and
- e. The Contractor is responsible to ensure that all UWSS EG systems are mission ready in accordance with the navy readiness requirements within the specified time allocated for the mission and without

restrictions on related equipment that are required to perform the task order, as determined by the ship Commanding Officer.

## 5.2. KPI – 2 ISSC Support System

5.2.1. The ISSC Support System is the measure of the Contractors abilities to provide effective and efficient engineering services, to fully meet the customers supply support demands and to provide value engineering within budgetary constraints.

5.2.2. The ISSC Support system KPI measures the Contractor’s performance satisfaction rate in delivering on time effective engineering services, supply demand fulfillment and value engineering services on time and within assigned budget.

### 5.2.3. Calculation Method

5.2.4. The PfMS must calculate the MP for KPI 2 for each calendar year using the following equation:  

$$MP\text{-KPI } 2 = CPS = (\#EES + \#SDF + \#VES) / (TESR + TSDO + \text{Total VES})$$

Where:

- a. CPS = Contractor’s Performance Satisfaction Rate;
- b. #EES = Number of effective engineering services delivered;
- c. #SDF = Number of Supply Demands Fulfilled;
- d. #VES = Number of Value Engineering Services Provided;
- e. TESR = Total Number of Engineering Services Requested;
- f. TSDO= Total Number of Supply Demands Ordered; and
- g. TVES= Total Number of Value Engineering Services demanded or determined.

### 5.2.5. Business Rules and Conditions

5.2.6. Services Performed and delivered satisfactorily indicates that the engineering services delivered were deemed satisfactory by the customer and were on time, on budget and were accepted by the customer. Supply delivery satisfaction indicates that the item was received at the correct location, within the required timeframe and the delivered items were accepted in good/correct condition.

### 5.2.7. Calculations for Adjusted Performance Score

5.2.8. An APS for KPI 2 must be calculated based on the target values shown in Table 6.

Measurement Point	Value
A - Minimum	90%
B - Standard	97%
C - Required	100%

<b>D – Standard APS</b>	<b>80%</b>
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**Table 6 - KPI 2 Adjusted Performance Score Values assigned to Figure 2 Set Points**

5.2.9. The APS-KPI 2 Band calculations are as shown in Table 7 Below.

<b>APS Score Calculations</b>		
MP = C	Band I	APS = 100%
B ≤ MP < C	Band II	APS = 80%
A ≤ MP < B	Band III	APS = 50%
MP ≤ A	Band IV	APS = 0%

**Table 7 - KPI 2 Adjusted Performance Score Values assigned to Figure 2 Scoring Bands**

### 5.3. KPI – 3 Effective Knowledge Management

5.3.1. Effective Knowledge Management is the measure of the Contractor’s performance in the timely provision of technical data and problem resolution through measurement of technical problem resolution response and technical information/advice response times. This is accomplished in the UWSU ISSC through technical compliance monitoring of the response times associated with Technical Problem Resolution Responses and Technical Information Responses.

5.3.2. Whereas:

- a. Technical Problem Resolution Response Time Compliance is the number of technical problems resolved within the agreed response time for the problem priority throughout the reporting period; and
- b. Technical Information Response Time Compliance is the number of requests for technical information and advice that were provided within the agreed response time within the reporting period.

#### 5.3.3. Calculation Method

5.3.4. The PfMS must calculate the MP for KPI 3 for each calendar year using the following equation:

$$MP_{KPI\ 3} = 70\% (KPI\ 3A\ Score) + 30\% (KPI\ 3B\ Score)$$

Where:

- a. KPI 3A Score is determined from Table 8 based on the number of Technical Problems not resolved within the required response time for the priority of the problem; and

- b. KPI 3B Score is determined from Table 8 based on the number of requests for technical information and advice that were not resolved within the required response time.

KPI Score	KPI 3A Technical Problem Resolution	KPI 3B Technical Information Response
1.0	0 to ≤ 7 Total Number of requests for Technical Problem Resolution not resolved within the required response time	0 to ≤ 7 Total Number of requests for Technical Information not resolved within the required response time
0.75	7 < to ≤ 10 Total Number of requests for Technical Problem Resolution not resolved within the required response time	7 < to ≤ 10 Total Number of requests for Technical Information not resolved within the required response time
0.5	10 < to ≤ 15 Total Number of requests for Technical Problem Resolution not resolved within the required response time	10 < to ≤ 15 Total Number of requests for Technical Information not resolved within the required response time
0	15 < or more, Total Number of requests for Technical Problem Resolution not resolved within the required response time	15 < or more, Total Number of requests for Technical Information not resolved within the required response time

**Table 8 - Scoring of KPIs 3A & 3B**

**5.3.5. Business Rules and Conditions**

- 5.3.6. If no Technical Problems were to be resolved or requests for technical information and advice were to be provided within the reporting period, then the applicable KPI 3.i score will be 1.0

**5.3.7. Calculations for Adjusted Performance Score**

- 5.3.8. An APS for KPI 3 must be calculated based on the target values shown in Table 9.

Measurement Point	Value
<b>A - Minimum</b>	<b>70%</b>
<b>B - Standard</b>	<b>85%</b>
<b>C - Required</b>	<b>100%</b>
<b>D – Standard APS</b>	<b>80%</b>

**Table 9 - KPI 3 Adjusted Performance Score Values assigned to Figure 2 Set Points**

- 5.3.9. The APS-KPI 3 Band calculations are as shown in Table 10 Below.

APS Score Calculations		
MP = C	Band I	APS = 100%
B ≤ MP < C	Band II	APS = 80% + (MPKPI3 - 85%) x 1.33

$A \leq MP < B$	Band III	$APS = (MPKPI3 - 70\%) \times 5.33$
$MP \leq A$	Band IV	$APS = 0\%$

**Table 10 - KPI 3 Adjusted Performance Score Values assigned to Figure 2 Scoring Bands**

## 6. System Health Indicators (SHI) Detailed Descriptions

### 6.1. SHI-1 Mission Diminished Operations

- 6.1.1. This SHI is intended to track the number of System failures that have or could result in Mission Diminished Operations. This includes any incidents or unscheduled activities that render the UWSS EG unable to fully perform its primary or required mission operations. This includes all OPDEF tracked incidents, any unplanned outages for maintenance or upgrades and any defects that reduce the capability of the UWSS EG to perform its primary operations. These incidents or system outages are determined by the Ships Commanding Officer and are to be tracked on a per ship basis to identify the individual UWSS EG System, the number of incidents or outages and the duration of each outage in hours/days.
- 6.1.2. The Mission Diminished operations are to be tracked at the unit level and are to be recorded on a tracking sheet that records: ship name/no., UWSS EG System affected, date initiated, date rectified, OPDEF description, capability lost, sub-system/equipment affected, OPDEF Category, no. OPDEF duration, Incident causes and any other reasons for the system outages.
- 6.1.3. SHI's are to be reported to the PfMS on a monthly basis and will be reported on by the PfMS on a semi-annual basis.

### 6.2. SHI-2 Critical Failures

- 6.2.1. Critical Failures are any UWSS EG system failure that results in a defect that causes a system or equipment system outage and is required for failure tracking and causation analysis. Tracking critical failures is required to both determine the MTBCF and for determination of the causation and analysis of critical failures and for reporting purposes. Critical failures will be used for failure mode analysis to determine what the factors were involved in the component or system failures and for tracking how often the failures occur.
- 6.2.2. Critical failures will be used for determining frequency of failures and to determine if repetitive factors were involved in the failures and if the same components parts are repetitively failing on multiple systems. Failure mode analysis will lead into failure cause analysis and redesigning and rectification of the failure cause to eliminate and reduce additional failures. This will lead to improved performance and improved reliability of the UWSS EG Systems.
- 6.2.3. Critical Failures are to be tracked at the unit level and are to be recorded on a tracking sheet that records: ship name/no., UWSS EG System affected, date initiated, date rectified, OPDEF

description, capability lost, sub-system/equipment affected, OPDEF Category, no. OPDEF duration, Incident causes and any other reasons for the system critical failure or failure modes that may have occurred.

### **6.3. SHI-3 Mean Time Between Critical Failures (MTBCF)**

6.3.1. ‘Mean Time Between Critical Failures’ is a measure of the duration of time between the time a critical failure on a specific system was rectified until the start of another system or specific equipment failure. MTBCF provides an expected duration of time that an UWSS EG system can be expected to last between failures and is provided for tracking and planning purposes and as a measure as to how reliable the UWSS EG System is and how predictable additional failures might be.

6.3.2. The MTBCF can be calculated in days and or hours between failures and outages and is provided as an annual calculation using the equation:

a. MTBCF in Days:

MTBCF = Total number of RCN days from the start of the last failure down time until system restoral /number of failures during the reporting period

b. MTBCF in Hours:

MTBCF in Hours = Total number of hours between the start of the last failure down time until system restoral/number of failure in the reporting period.

6.3.3. MTBCF data is to be recoded and reported to the PfMS and the resulting data analysis is to be reported to the DND EMT and to stakeholders as required. MTBCF data will be used for failure mode analysis to determine what the factors were involved in the component or system failures and for tracking how often the failures occur.

### **6.4. SHI-4 Corrective Maintenance Actions and Quality**

6.4.1. Corrective Maintenance Actions and Quality Issues is a System Health Indicator that provides an index listing of corrective failure activities that were required for the each of the UWSS EG systems both on an individual system and as a combined systems report. This report is provided to maintain a detailed tracking vehicle that monitors all system related incidents and corrective actions taken. It provides a Line Repairable Unit (LRU) level repairable index, a costing associated with each breakdown, the duration of repair time and manpower level of effort involved in each corrective maintenance action.

6.4.2. This SHI report is also driven by quality issues that may occur and may affect both the duration of the repair and the scope of the repair. The scope of a corrective repair can be adversely affected when a lower quality replacement part is installed or removed where additional maintenance actions, caused by quality issues are created i.e. additional cabling connections are required to be installed for a lower quality item; installation and mounting holes may not match

correctly for a lower quality repair item. These issues can drive other factors such as repair duration and system reliability.

- 6.4.3. Corrective Maintenance Actions and Quality Issues are to be tracked at the unit level and are to be recorded on a tracking sheet that records: ship name/no., UWSS EG System affected, date initiated, date rectified, corrective maintenance work description, duration of time lost, sub-system/equipment affected, Quality issues involved or discovered, Incident causes and any other reasons for the corrective maintenance actions that may have occurred. It provides a listing of the basic corrective maintenance information needed, over the specified repair period, for further repairs analysis by the PfMS such that it will enable the determination of the candidates for Top 10 Reliability Drivers, for input into the Contractor's reliability improvement program and for making determinations as to the Critical Failure analysis and failure modes of the UWSS EG Systems.

## **6.5. SHI-5 Top 10 Reliability Drivers**

- 6.5.1. The Top 10 Reliability Drivers are a System Health Indicator that tracks the high failure rates of the UWSS EG Line Repairable level components and equipment. It is derived from data taken from the critical failures and OPDEFs listings to track all components that have failed to determine that causation and the frequency of failures. The Contractor will document and track all failure items as they occur with the intention of maintaining a work failure rate and reliability database as an input to his reliability improvement program. The top 10 highest failure rate items will be reported on by the Contractor on an annual basis and a complete database report of all failure data must be maintained and is to be provided to the DND Quality Assurance Representative if and when requested.
- 6.5.2. The Top Reliability Drivers data will be utilized as a direct input into the Contractor's Reliability Improvement Program. Each high failure rate item determined by this report is to be subjected to failure analysis by the Contractor to determine the causation of the failures and corrective redesign or corrective maintenance actions to be conducted on the components to correct the failure issues.

## **6.6. SHI-6 Reliability Improvement**

- 6.6.1. The Reliability Improvement System Health Indicator monitors the response activities and determinations made by the Contractor to Critical Failure and high failure rate items in the ISSC. This SHI provides an indication of how often and how effectively the reliability improvement system reacts to the Top 10 reliability Drivers, critical failures and to other high failure rate items and issues. The Contractor will report the actual observable reliability improvement and any cost savings resulting from the improvements to Canada on an annual basis. The monitoring improvement program will continue to monitor the improvements provided and implemented into the UWSS EG in order to monitor the improvements gained.

- 6.6.2. The Actual Percentage of reliability improvement as determined and reported by the Contractor must be calculated, for each of the top 10 reliability drivers using the following formula:

$$\% \text{ Reliability Improvement} = \text{actual MTBCM} / \text{MTBCMbaseline}$$

Where:

- a. MTBCM = Mean Time Between Corrective Maintenance; Is the time duration between the completion of a Corrective Maintenance action on a specific LRU component or system until start of the next Corrective Maintenance action on that specific LRU component or system.
- b. MTBCMbaseline = equipment/assembly MTBCM prior to improvement program.

## **6.7. SHI-7 Preventive Maintenance Compliance**

- 6.7.1. Preventive Maintenance Compliance is a System Health Indicator that monitors the level of Completion of the Level I, II and III Preventative Maintenance Activities on a per installed platform or shore facility basis. The Preventive Maintenance Compliance must be measured on a per system level as well as the complete UWSS EG. The PfMS is to monitor the completion reports for all Preventative Maintenance Activities to include any deferrals, and any Preventative Maintenance non-completion. Any deferred or Non-completed Preventative Maintenance must be documented to determine the exact reasons for deferral or non-completion.
- 6.7.2. This SHI determines the deferral rates for Preventative Maintenance routines that are not completed as scheduled and any causation factors or operational event that may be factors. It should be measured for each ship by system and for each Preventative Maintenance level. Non completion of Preventative Maintenance can be an underlying factor of high failure rates and indicate a reactive maintenance culture and will indicate units where the Preventative Maintenance is not being conducted.
- 6.7.3. This SHI is to be calculated as an annual figure on a per ship basis and is calculated as follows:  
# PM Routines completed / # PM routines Scheduled  
And,  
# Level\_\_\_ PM Routines completed / # Level\_\_\_ PM routines Scheduled  
And,  
The calculations can be modified for one system or the whole UWSS EG.

## **6.8. SHI-8 Top 10 Stock Out Items**

- 6.8.1. The Top 10 Stock Out Items, System Health Indicator, identifies the 10 top most unavailable stock items, the cause for their unavailability, the priority level of their requirement and the duration of time until they are received. All stocked out and back ordered items are to be entered

into a log and are to be tracked by the Contractor such that these items can be monitored for their receipt dates.

- 6.8.2. Stocked out items refer to items that the Contractor would normally hold on inventory such as installation materials and pre-staged equipment systems. They are tracked as stock out items in order to identify the cause of the stock out if known and what corrective actions were required. This list will be used to identify areas where greatest supply chain improvements can be made and to insure that supply chain issues are dealt with in a timely manner. Improvements in supply chain management will affect both SPM-2 and in KPI-1 for demand satisfaction rate and the ISSC support system in providing effective and efficient services.