



IALA GUIDELINE

G1168 QUALITY CONTROL OF THIRD-PARTY ATON SERVICE PROVIDERS

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CONTENTS

1. INTRODUCTION	4
2. PURPOSE	4
3. CONTRACTOR PREQUALIFICATION AND SELECTION	5
3.1. Basis for selection	5
3.1.1. Capability	6
3.1.2. Experience	6
3.1.3. Capacity	6
3.1.4. Qualifications of staff	6
3.1.5. Works Schedule	6
3.1.6. ISO Certification / Quality Control	7
3.1.7. Financial undertaking and viability	7
3.1.8. Insurance and Warranties	7
3.1.9. Safety at Work	8
4. CONTROL OF CONSTRUCTION AND MAINTENANCE ACTIVITIES	8
5. CONTRACTOR PERFORMANCE MONITORING	10
5.1. Management Plans	10
5.1.1. Communications plan	11
5.1.2. Risk management plan	11
5.1.3. Environmental management plan	11
5.1.4. Quality management plan	11
5.2. Reporting	12
5.3. Inspections and Audits	12
5.4. The use of Key Performance Indicators (KPIs)	13
6. INFORMATION MANAGEMENT AND QUALITY RECORDS	14
7. EXAMPLES	16
8. DEFINITIONS	16
9. ABBREVIATIONS	17
10. REFERENCES	17
ANNEX A EXAMPLE OF THIRD-PARTY QUALITY CONTROL	19

List of Tables

<i>Table 1</i>	<i>Sample Inspection and Test Plan</i>	<i>20</i>
<i>Table 2</i>	<i>Buoy Services Quality Control Form</i>	<i>23</i>



1. INTRODUCTION

Many national authorities, State and local governments and other Marine Aids to Navigation (AtoN) operators use third-party contractors to maintain or repair their AtoN services.

As part of contracting to third parties it is important to ensure that the third-party contractor has the necessary capability and experience and there is oversight and control of the work being undertaken. This includes appropriate conditions, measures and reporting requirements in the contract documents to ensure the contracting authority has confidence that the third-party contractor will meet or exceed the expectations set out in the contract, thus ensuring the contracting authority fulfils their international and national responsibilities.

Contracting to third-party contractors can range from the complete AtoN service, a portion of the AtoN service, to specialized one off projects. Regardless of the scope of the outsourcing, contracting authorities must continue to meet their obligations under:

- SOLAS [1] Chapter V regulation 13 - Establishment and operation of Aids to Navigation: This regulation requires contracting governments to provide aids to navigation as necessary, based on the volume of traffic and degree of risk. AtoN installation and management should be in accordance with IALA Standards, Recommendations and Guidelines (IMO *SN.1/Circ.297*), and information relating to AtoN should be made available to all concerned – this is the high level obligation that sets the framework for how a contracting authority delivers services from the establishment of AtoN, the buoyage system used to the approval and notification of its AtoN.
- SOLAS Chapter V regulation 4 – Navigational Warnings: This regulation requires contracting governments to take all steps necessary to ensure that, when intelligence of any dangers is received from whatever reliable source, it shall be promptly brought to the knowledge of those concerned. This advice is promulgated to mariners via navigational warnings (IMO resolution *A.706 (17)*) – the contracting authority should ensure that appropriate warnings are issued to notify mariners of changes to AtoN as a result of maintenance or project activities.
- National and local legislation: These may include provisions for AtoN, and may also set National responsibilities for construction, health and safety, heritage and utility services that may apply to an AtoN service or project – this legislation may identify the chain of responsibility and milestones that may also need to be included in third-party contracts.
- Standards and Codes: These include the IALA Standards, Recommendations and Guidelines, including the IALA Maritime Buoyage System and may also include construction and safety standards and codes of practice - these will provide guidance on availability, design and best practice for third-party contracts [4][5][6][7].

Contracting services to third-party contractors may deliver greater efficiencies and allow access to specialized skills and services. It is important to ensure the correct contract model is used for the task, the contract expectations are clear, the contract clearly describes the scope of works and includes targets and reporting requirements to ensure the contracting authority receives a value for money outcome and continues to meet their international and national responsibilities.

2. PURPOSE

The purpose of this Guideline is to provide contracting authorities with guidance on a framework for ensuring third-party contractors that are providing engineering and maintenance services for AtoN are delivering those services to an acceptable standard.



AtoN maintenance services cover a broad range of activities that may include:

- Supply, installation, and commissioning of AtoN equipment and systems.
- Maintenance of AtoN equipment and systems.
- Major repairs and maintenance of supporting AtoN infrastructure, buildings, towers.
- Deployment and retrieval of floating AtoN.
- Construction of AtoN infrastructure.
- Provision of other related services.

This Guideline is not a formal contract document for the performance of a contract by third-party contractors but guidance on issues that might be considered when outsourcing AtoN maintenance services.

The contracting authority should ensure that appropriate contracts are in place with third-party contractors depending on the nature and the scope of work being outsourced to third-party contractors.

Typical contract documentation can include some or all of the following types of documents:

- Conditions of Contract under which the contract is being performed
- Form of Tender
- Scope of Work or Works Requirements
- Specifications
- Drawings
- Schedule of Rates, Bills of Quantities, or Pricing Document
- Suitability Assessment Questionnaire for prequalifying and selecting third-party contractors

3. CONTRACTOR PREQUALIFICATION AND SELECTION

3.1. BASIS FOR SELECTION

Prior to selecting a third-party contractor the contracting authority should consider whether the third-party contractor is capable of delivering the services to the required standard of the contracting authority.

The following should be considered when assessing suitability to undertake the required work:

- Capability
- Experience
- Capacity
- Qualifications of staff
- ISO Certification/Quality control
- Financial undertaking and viability
- Insurance
- Safety at work

3.1.1. CAPABILITY

The contracting authority should satisfy itself that the third-party contractor has the capability to undertake the required work.

The contracting authority should request the third-party contractor to prepare and conduct demonstrations or presentations to substantiate the contractor's capability to fulfil the contract requirements. Other forms of documentary evidence that demonstrate capability could be also requested.

3.1.2. EXPERIENCE

The contracting authority should satisfy itself that the third-party contractor has the experience to undertake the required work.

The contracting authority should request the third-party contractor to provide evidence of their relevant expertise, experience, and track record in providing the required or similar services. This request could include a list of previous or similar contracts for reference or allowing the contracting authority to gather feedback from previous clients on the quality of works performed by the third-party contractor.

3.1.3. CAPACITY

The contracting authority should satisfy itself that the third-party contractor has the capacity to undertake and complete the required work in the timeframe required by the contracting authority.

The contracting authority should request the third-party contractor to demonstrate that they have the capacity to undertake the required work. The third-party contractor should have access to the necessary resources and be familiar with all aspects of the required works, this could include possessing a good management team, experienced site supervisors, access to plant and equipment, qualified technicians and a skilled workforce to carry out the services in accordance with the requirements of the contract specifications, technical documents and schedules to the satisfaction of the contracting authority.

3.1.4. QUALIFICATIONS OF STAFF

The contracting authority should satisfy itself that the third-party contractor has a sufficient number of qualified and competent personnel for the type of work and activities that are being undertaken.

Relevant qualifications and demonstrated relevant experience are important. Specialist skills may be required for the different aspects of the work such as structural welding repairs, protective coating application works, electrical system maintenance etc. Staff may be required to be trained and hold certification/licences for operating vessels and other heavy plant. The contracting authority could request copies of the certificates or a list of relevant experience of the staff undertaking and managing the work.

Depending on the scope of the work being undertaken and the level to which a detailed understanding of AtoN is required, the contracting authority may also consider it beneficial for the third-party contractor to have staff that have completed some level of the IALA World-Wide Academy manager or technician training [14][15].

3.1.5. WORKS SCHEDULE

The contracting authority should satisfy itself that the third-party contractor has the ability to plan and schedule the required work to ensure that it is completed in the timeframes required by the contracting authority.

The contracting authority should consider requesting the third-party contractor to propose and submit a works schedule to carry out the required works, which takes into account the stakeholder engagement, permits and approvals, equipment, materials, personnel and transportation requirements.

Other controls could include preparation of an inspection and test plan with approval hold points or a checklist of each item of repair for approval by the contracting authority. This process could include a joint review of services or repair works performed, whether physically or via documentation. It could also include acceptance trials/tests and the identification of and making-good of all defects to the satisfaction of the contracting authority.

3.1.6. ISO CERTIFICATION / QUALITY CONTROL

The contracting authority should satisfy itself that the third-party contractor has appropriate management systems for controlling the quality, environmental and safety aspects of the services being delivered under the contract. The International Standards Organization (ISO) has published a series of standards for quality, environmental and safety management systems.

The third-party contractor should demonstrate that their management systems for controlling the work comply with the intent of the ISO management system standards. One way of doing is to request copies of the third-party contractor's management system accreditation certificates or records of recent system audits.

3.1.7. FINANCIAL UNDERTAKING AND VIABILITY

Depending on the scale of the work being undertaking and the project risks, the contracting authority may want to satisfy itself that the third-party contractor is in a financially stable position. Options for reducing risk could include a financial viability assessment on the third-party contractor or the requirement for the provision of a performance bond in the contract.

If the financial risk of a contract is deemed as high, or the cash flow of a third-party contractor to support works is in question, the contracting authority should consider undertaking a financial viability assessment of the contractor prior to contracting the works. The contracting authority may request the contractor's past 3 years of financial statements and do their due diligence to assess if the contractor is in a stable financial position and is well positioned to fulfil their commitment to the contract.

There are many financial ratios that can be used to assess profitability and financial stability of a third-party contractor, professional assistance should be sought when undertaking financial viability assessments if in house expertise is not available.

3.1.8. INSURANCE AND WARRANTIES

The contracting authority should consider requiring the third-party contractor to hold appropriate levels of insurance for the work being undertaken and that these covers are kept updated and relevant to the scope of work being undertaken.

The following types of insurance may be considered depending on the services being delivered by the third-party contractor:

- Property
- Business interruption
- Transit
- Contract works;
- Workers' compensation
- Public liability
- Products liability
- Professional indemnity
- Motor vehicle liability

Similarly, the contracting authority should state, wherever possible, the warranties required for the services being delivered and that these are contractually binding. This may include warranties on products and defect liability periods for the works.

3.1.9. SAFETY AT WORK

It is important that the contracting authority considers whether the third-party contractor is able to take full responsibility for the adequacy, stability and safety of all site undertakings and method of operations. This should include the provision of experienced supervisory staff and competent personnel at all times to ensure that the contractor's obligations are met and that personnel perform to a sufficient standard on all aspects of safety.

The third-party contractor should report all accidents to the contracting authority (and other relevant authorities). It is also important to report incidents that do not involve injuries to personnel as this information may be used to implement precautions or changes to work practices to prevent future accidents.

The third-party contractor should ensure that its employees and temporary personnel are informed of the safety rules, requirements, and instructions and that all instructions, advice, rules, regulations whether of the contracting authority or of any other body or organisation, government or otherwise on safety at work are followed and strictly adhered to.

The contracting authority should also ensure the third-party contractor retains responsibility for safety at work and maintains a safe system of work at all times and in addition, ensures its employees and temporary personnel comply with all safety rules and regulations.

The third-party contractor should provide its employees and temporary personnel with the appropriate training and provide appropriate clothing and personal protective equipment such as, but not limited to, safety helmets, reflective lifejackets, safety shoes, hand gloves and eye protection, and ensure that all such employees and temporary workers use such protective equipment in the proper manner while at work.

4. CONTROL OF CONSTRUCTION AND MAINTENANCE ACTIVITIES

Controlling the performance and quality of maintenance and construction activities performed by a third-party contractor can be achieved by clearly defining the expectations and requirements that the contracting authority has of the contractor. These expectations should be clearly described in a contract scope of work (SOW).

A clear and accurate SOW that has been agreed upon between the contracting parties can play a significant role in the avoidance of confusion and disagreement between the parties. A poorly defined SOW can often result in conflict and disagreement and lead to unexpected delays and increased costs to both parties. A clearly defined SOW provides both the third-party contractor and contracting authority with clarity on costs, resourcing and expected outcomes.

The SOW should detail the requirements and standards for the works that are required to be undertaken by the third-party contractor. An example SOW for annual servicing of an AtoN may include sections such as:

- Perform annual servicing of AtoN including:
 - Lantern
 - Remove all bird fouling and clean lantern
 - Service in accordance with manufacturer's recommendations
 - Check flash character and test operation
 - Batteries
 - Check battery voltages
 - Clean any terminal corrosion and check connections
 - Replace any failed batteries
 - Solar panels

- Remove all bird fouling and clean panels
- Check all cable connections
- Perform maintenance of structure including:
 - Paint system
 - Identify and remove any corrosion found on the structure
 - Repair coating system in accordance with paint specification
 - Provide coating records
 - Glazing
 - Replace any damaged glazing panes
 - Check all glazing seals for water ingress
 - Concrete footings
 - Check concrete for any spalling or drummy patches
 - Repair concrete using concrete repair specification

The SOW should also reference any documents, deliverables, or other information that form an expectation or requirement of the contract (either to be provided by the contracting authority, or required from the third-party contractor), some examples might include:

- Specifications that work must be carried out to, for example:
 - Coating specification
 - Product specifications e.g., lanterns, AIS equipment, Racons
 - Electrical specification
 - Drafting specification
- Forms that information must be provided on:
 - Inspection form
 - Coating records
 - Light range and sector check forms
- Procedures that the third-party contractor must follow or develop:
 - Change procedure
 - Repair procedures
- Reports that the third-party contractor must provide:
 - Inspection reports
 - Daily/weekly/monthly/quarterly/annual reports
- Schedules and programmes that the third-party contractor must follow:
 - Maintenance schedule
 - Component replacement programme, e.g., lanterns, buoy moorings
 - Inspection and Test Plans (ITP's)



- Information documents that assist the third-party contractor in assessing the site:
 - AtoN site information
 - Heritage reports
 - Safety and environmental documents that the third-party contractor must provide or abide by
 - Risk assessments
 - Safe Work Method Statements (SWMS)

The extent and detail of the SOW and documentation depend heavily on the requirements of the contract and the ability of the contracting authority to oversee the third-party contractor.

Whilst the above is the traditional model for defining a maintenance or construction SOW, it should also be noted that other possibilities exist, such as models based on key performance indicators (KPIs) or availability targets only, without prescriptive requirements.

5. CONTRACTOR PERFORMANCE MONITORING

It is important that there are established mechanisms for monitoring the performance of a third-party contractor to ensure that the contract deliverables are being met and the contracting authority is receiving value for money.

Performance monitoring will assist in demonstrating compliance to contractual obligations, technical specifications, and conformity to legislative requirements. It may also be used to drive the cycle of continual improvement. The type, method, duration, and frequency of performance monitoring should be established by the contracting authority and should be primarily based on their requirements, to ensure all services are delivered to the correct standard.

Performance monitoring requirements should be stated, and wherever possible, built into contractual arrangements, to ensure all parties are aware of their obligations. These arrangements may be as descriptive as the SOW to which it applies and should be both high-level and task-descriptive.

Some examples of performance monitoring methods are shown in the following sections.

5.1. MANAGEMENT PLANS

Management plans are critical in establishing the processes by which the services are provided to ensure they meet the required standards, have a minimal environmental impact, identify and mitigate all risks and ensure workplaces and worksites are safe.

They are also an ideal, high level document that can be used to identify the processes for monitoring of performance, along with measurable indicators that allow for assessment and identification of non-conformity or lapses in performance.

There is no standard requirement or framework for management plans and how they are developed is largely dependent on the compliance backdrop to which the AtoN services are being delivered.

There are various recognized international standards, such as *ISO9001:2015 Quality Management Systems* [8], *ISO14001:2015 Environmental Management Systems* [9], *ISO31000:2018 Risk Management* [10] and *ISO45001:2018 Occupational Health and Safety Management Systems* [11], which provide a common approach to managing these aspects. In some cases, independent external accreditation to the ISO standards may require that management plans are based on the basic framework provided by accreditation standard, but then developed in further detail to suit the scope of the AtoN services being provided.



However, management plans may also follow requirements that align with the contracting authority's systems and processes. Some examples of relevant management plans that may be required for AtoN work are detailed in the following sections:

5.1.1. COMMUNICATIONS PLAN

A communications plan can be used to outline the communication processes required to ensure that there is regular dialogue maintained and that records are kept and stored. A communications plan may include requirements for formal correspondence, meeting frequency, records and reporting.

Having a matrix of communication requirements clearly outlined, will allow for monitoring of performance of a third-party contractor's ability to record and communicate key information and data to the contracting authority or other stakeholders.

5.1.2. RISK MANAGEMENT PLAN

A risk management plan can be established to identify and assess all risks that may impact delivery of third-party contractor AtoN services. A risk management plan should also identify the risk mitigation measures required to minimize the potential impact of those risks on AtoN operations but also the standard to which the services are delivered.

A risk management plan may include a simple performance mechanism such as a regular review of the risk matrix to ensure that the identified risks are relevant, current and adapted to changing circumstances.

Occupational health and safety management is a critical part of risk management when working with AtoN, and implementation of a system such as an Occupational Health and Safety Management Plan (OHSMP) for identifying and mitigating risks in the workplace will contribute to risk control, and in some cases will be required by national laws and legislation. IALA Guideline *G1092 Safety Management for AtoN Activities* provides detailed guidance on the structure and content of safety management plans.

5.1.3. ENVIRONMENTAL MANAGEMENT PLAN

An environmental management plan is an effective mechanism for managing environmental impact, it can be tailored to identify and control environmental risks to a project / activity level. Environmental management plans are usually developed to respond to environmental requirements at a legislative level, but also to policies and systems at an organizational level.

An environmental management plan should formally identify all environmental risks, assess the level of impact, highlight environmental risks that are considered significant, and provide guidance on the necessary mitigation measures required to reduce all risks to the lowest acceptable level.

For contracting authorities, the environmental management plan, and particularly risk matrixes, can also be used to identify the mechanisms by which environmental performance is measured and monitored.

This can include audits of environmental systems, formal recording and review of environmental incidents, regular reviews of risk matrices, the introduction of environmental innovations and sustainable practices.

Guidance on sustainability and environmental management in AtoN can be found in IALA Recommendation *R1004 Sustainability in the Provision of Marine Aids to Navigation* [2] and IALA Guideline *G1036 Environmental Management in Aids to Navigation* [3].

5.1.4. QUALITY MANAGEMENT PLAN

A quality management plan is an effective method of setting out work processes, monitoring and testing requirements, responses to non-conformity and, in general, providing a documented system to ensure that all third-party AtoN services are being delivered to the appropriate standards and that a cycle of constant improvement is adopted.

Whilst the *ISO9001:2015 Quality Management Systems* provides a universally accepted framework for the establishment of a quality management system or plan, the format and content can be adjusted to respond to the requirements of the services being delivered.

The quality management plan provides a clear framework for performance monitoring. Methods of performance monitoring that may be incorporated into a quality management plan include:

- A project plan or other method of formally tracking performance and delivery against a formal schedule.
- Inspection Test Records (ITR) which identify and document the types, frequencies and level of inspections and testing for services delivered. Hold points and witness points introduce stages of the works at which these activities must be carried out and are generally related to ensure the quality of the work meets the standards to which it applies.
- Equipment calibration which ensures all key equipment used is calibrated, tested where necessary, and able to ensure the quality of the services delivered.
- Training plans which identify the minimum competencies required for personnel delivering all levels of services, which can be regularly reviewed and audited. This is critical in the performance of third-party contactors as it ensures there is sufficient competency and expertise at all levels of the organization.
- Commissioning plans or procedures, documenting the method by which AtoN equipment is commissioned, and allows the contracting authority to measure performance in such a key phase of AtoN delivery.

5.2. REPORTING

Reporting is a key requirement in any contract, as it allows for the development and collection of records that relate to the work being carried out, or the services being delivered.

The type and frequency of reporting is dependent on the complexity of the work and may also be related to systems, asset management systems or other management mechanisms that the contracting authority has in place.

Some of the reporting types which may be considered are:

- Weekly or daily work reports
- AtoN site inspections
- Maintenance reports
- Commissioning reports
- Monthly, quarterly, or annual progress reports
- Failure response reports
- Incident reports (incidents, accidents and near misses)
- Other reports as required by the applicable management plans in place

5.3. INSPECTIONS AND AUDITS

Inspections and audits are a necessary mechanism to have in place, as it allows a contracting authority to physically verify that works are completed, or services delivered in compliance with their stated requirements.

The scope and scheduling of inspections and audits can vary widely and are often aligned with the requirements of established management plans, contractual requirements, or technical specifications. An example of inspection and audit types are:

- Audits of records
- Site inspections of completed work
- Site inspections and audits of work being carried out
- Independent audits of AtoN sites
- Annual audits of facilities being used by third-party contractors
- Environmental audits
- Workplace safety audits
- Quality audits
- Factory Acceptance Tests (FAT) or pre-installation inspections
- Site Acceptance Tests (SAT)

5.4. THE USE OF KEY PERFORMANCE INDICATORS (KPIs)

The use of key performance indicators (KPIs) is an effective method of monitoring contractual performance, across a wide range of different areas. They are quantifiable, outcome-based statements that are incorporated into a contract, which are used to measure performance.

The type of KPIs used will be directly related to the main scope of the contract, the key deliverables but also other high-level requirements that may be stated in management plans or other key documents. A contracting authority should choose the KPIs best suited to the scope of services being delivered.

A common practice in some outsourcing arrangements is to tie KPI performance to a set percentage or portion of the contract payments, as a type of security against the third-party contractor's performance. This can act as a commercial incentive to ensure delivery of services is to the required standard.

KPIs that may be considered for use in AtoN delivery are:

- Availability objectives to ensure that the third-party contractor maintains AtoN assets in compliance with IALA Recommendation *R0130 Categorisation and Availability Objectives for Short Range Aids to Navigation* [12] and IALA Guideline *G1035 On Availability and Reliability of Aids to Navigation – Theory and Examples* [13];
- Mean time to repair (MTTR)
- Mean time between failures (MTBF)
- Compliance with environmental and safety management plans
- Number of sustainability initiatives introduced by the third-party contractor
- Number of non-conformances
- Stakeholder engagement
- Reporting requirements met
- Number of innovations introduced
- Number of faults or failures
- Compliance with work programs and schedules
- ISO or other industry related accreditations

6. INFORMATION MANAGEMENT AND QUALITY RECORDS

The contracting authority should consider maintaining a system for the management of information, data and records pertaining to the services being delivered by the third-party contractor.

An effective way of achieving this is through the utilisation of a Quality Management System (QMS) as defined in IALA Guideline *G1052 Quality Management Systems for AtoN System Delivery*. A quality management system will allow the contracting authority to administer documentation, information and data associated with the provision of an AtoN service.

The contracting authority is advised to retain ownership of all documentation, data and records associated with their AtoN, and allow access (of the information) to third-party contractors engaged to deliver engineering and maintenance services on those AtoN.

All works undertaken should comply with national standards and regulations and third-party contractors should demonstrate this to the contracting authority in their documentation and certification supplied under any agreed processes and procedures. These documents and certificates should be retained in a document management system as necessary.

The contracting authority in conjunction with the third-party contractor, should agree a method of sharing AtoN information to ensure that all documentation is up to date and accessible as necessary, this may include the use of a quality management system to retain documentation. Some examples of the type of documents and information that the contracting authority may want to retain are as follows:

- Operation and maintenance manuals
- Equipment manuals (installation/operation)
- Site drawings, including as-built modifications and the reasoning for any alterations
- Software for specific equipment and associated configuration or setup/settings, including programming manuals
- Storage of software configuration files and where necessary a file naming scheme to be able to identify between different versions
- Remote monitoring system access/login details
- Floating AtoN wiring diagrams
- Colours of AtoN
- AtoN List (names, positions, category, character, range, colour, MMSI, Racon code etc.)
- Navigation charts of the AtoN
- Issued notice to mariners and radio navigation warnings
- Monthly/quarterly/annual reporting of work undertaken
- AtoN Availability figures by category and or AtoN
- Contact details of contracting authority and third-party contractor
- Communication methods and systems (i.e., phone in on arrival/departure from site)
- Site access requirements (neighbour notification, public access site, method of access – drive, walk, boat, helicopter, type of key etc.)
- Health and safety documentation (including reporting of incidents and near misses)
- Hazard awareness



- Risk assessments
- Record and retain all safety discussions as defined by health and safety legislation
- Environmental issues (flora, fauna considerations)
- Hazardous substances record (mercury, asbestos, lead etc.)
- Electrical standards certification/test and inspection records (as required by national legislation)
- Equipment calibration certification
- Safety equipment records (i.e., harness, lifejacket, personal locator beacon, survival suit, defibrillator, satellite phone/communications equipment etc.)
- Building control permissions (planning permission, listed building consents)
- Statutory approvals for the placement of the AtoN
- Radio licences (Racon, Automatic Identification System, Differential Global Navigation Satellite System, telemetry links, television licence)

Particular care should be given to the process required to ensure alterations and updates to AtoN systems and equipment are captured in a timely manner and notified to all concerned. It is important to capture the originator of any alterations to ensure traceability of the actions, and the process should be agreed upon between the contracting authority and the third-party contractor and may include:

- As-built drawings
- Alterations to equipment/wiring on site
- Alteration or adjustment of equipment programming or configuration/set up
- Replacement of legacy equipment such as chargers, solar panels or batteries
- Substitution of equipment (i.e., components such as relays etc.)
- Temporary repairs and remedial action plan
- Buoy moves due to bathymetric surveys and subsequent chart updates, including notice to mariners (NtM's)
- Serial numbers of replaced equipment (both removed and installed)
- Storage of software configuration files, and where necessary, a file naming scheme to be able to identify between different versions

The use of commercially available computerized maintenance management systems is encouraged and are designed to help schedule, plan, manage and track maintenance activities and keep historical records of work performed. Tasks that the above systems should be able to record and track may include:

- Annual/Biannual maintenance schedule and tasks to be performed
- Work Instructions/procedures
- Overdue work maintenance
- On site equipment list
- Spares held on site or off site
- Spares required to be taken to site, i.e., demineralized water, lamps, batteries
- Details of the current drawings for each site
- History of recent visits



- History of outages
- Outage/repair reports
- Remote monitoring system data and access to perform analytical tasks
- Requirement for specialized tools
- Requirement for specialized software/programs, leads, dongles and associated configuration files or setup
- Requirement for specific personal protective equipment
- Toolbox talk – pre visit discussion of jobs to be undertaken, documentation to be retained
- Daily toolbox talk and sign off of any necessary paperwork
- Inspection records detailing condition of AtoN (structural, electrical)
- Seaward Inspection of AtoN for the published character and range both day and night
- Photographic (including video) evidence of the condition of the AtoN (before, during, after visit/works)
- Floating AtoN service/casualty forms
- Floating AtoN off position reports
- Portable appliance testing records and schedule
- Test and inspection of electrical installations as required by national legislation
- Pressurized vessels test and inspection
- Fall arrest system test and inspection
- Lifting equipment certification and inspection
- Fire suppression system test and inspection
- Fire extinguishers test/inspection/replacement

7. EXAMPLES

Annex A includes two examples a contracting authority might consider to control the quality, safety and environmental outcomes for outsourced maintenance and project works.

The examples include:

- Building repairs and repainting; and
- Floating AtoN installation.

8. DEFINITIONS

The definitions of terms used in this IALA Guideline can be found in the International Dictionary of Marine Aids to Navigation (IALA Dictionary) and were checked as correct at the time of going to print. Where conflict arises, the IALA Dictionary should be considered as the authoritative source of definitions used in IALA documents.

In addition, for this Guideline it is useful to define the following terms:



Contracting authority

Refers to the party responsible for AtoN management, whether it be the Competent Authority, a private AtoN owner or any other party responsible for the delivery of the AtoN services. In the context of this Guideline, the contracting authority refers to the party that is contracting out part or parts of the AtoN service to a third-party contractor.

Third-party contractor

Refers to the third-party contractor or service provider to whom part or parts of the AtoN service are being outsourced or contracted.

9. ABBREVIATIONS

AIS	Automatic Identification System
DGNSS	Different Global Navigation Satellite System
EMP	Environmental Management Plan
FAT	Factory Acceptance Tests
IMO	International Maritime Organization (Acronym style)
ISO	International Standard Organization
ITP	Inspection and Test Plan
ITR	Inspection and Test Record
KPI	Key Performance Indicator
MMSI	Maritime Mobile Service Identity
MTBF	Mean Time between Failures
MTTR	Mean Time to Repair
NtM	Notice to Mariner
OHSMP	Occupational Health and Safety Management Plans
Racon	Radar Beacon
SAT	Site Acceptance Tests
SOLAS	International Convention for the Safety of Life at Sea
SOW	Scope of Works
SWMS	Safe Work Method Statement
QMS	Quality Management System

10. REFERENCES

- [1] International Convention for the Safety of Life At Sea (SOLAS)
- [2] IALA Recommendation R1004 Sustainability in the Provision of Marine Aids to Navigation
- [3] IALA Guideline G1036 Environmental Management in Aids to Navigation
- [4] IALA Recommendation R0132 Quality Management for Aids to Navigation Authorities
- [5] IALA Guideline G1052 Quality Management Systems for Aids to Navigation Service Delivery
- [6] IALA Guideline G1092 Safety Management for AtoN Activities
- [7] IALA Guideline G1005 Contracting Out Aids to Navigation Services
- [8] ISO9001:2015 Quality Management Systems



- [9] ISO14001:2015 Environmental Management Systems
- [10] ISO31000:2018 Risk Management
- [11] ISO45001:2018 Occupational Health and Safety Management Systems
- [12] IALA Recommendation R0130 Categorisation and Availability Objectives for Short Range Aids to Navigation
- [13] IALA Guideline G1035 On Availability and Reliability of Aids to Navigation – Theory and Examples
- [14] IALA Level 1 AtoN Manager Qualification
- [15] IALA Level 2 Technician Qualification

ANNEX A EXAMPLE OF THIRD-PARTY QUALITY CONTROL

A.1. QUALITY CONTROL FOR THIRD-PARTY BUILDING REPAIRS AND REPAINTING

The following example details a possible approach for quality control of a project being undertaken by a third-party contractor for building repairs and repainting of a heritage lighthouse.

A.1.1. STRUCTURE DETAILS

Type: Traditional lighthouse built in 1895, 30m tall, heritage listed.

Material: masonry block tower, chance brothers lantern room, internal steel stairway and platforms.

A.1.2. SCOPE OF WORKS

The Scope of Works (SOW) is as follows:

- Develop work methods including quality, safety and environmental plans;
- Detail a repair plan;
- Removal of existing paint and repaint of all surfaces internal and external;
- Repair of corrosion where required:
 - Stairways;
 - floor beams where interfacing walls;
 - platform floor plates; and
 - lantern room components.
- Reglazing of the lantern room with new glazing panes;
- Repair of any deterioration to the stonework and repointing where required;
- Installation of temporary AtoN for the duration of works;
- Removal and reinstatement of the AtoN equipment and power supply and upgrade in accordance with an electrical standard; and
- Provision of completion documentation.

A.1.3. PREQUALIFICATION

From the SOW skills and experience that the contractor, and or subcontractors need to prequalify in are:

- Management systems to control quality, safety and environment;
- Industrial coatings, including the potential of lead paint removal;
- General building repairs;
- Work on heritage buildings;
- Glazing works;
- Electrical works;
- AtoN and electrical installation and commissioning; and
- Documentation.

During a tender period the contracting authority should request tenderers detail their, and/or their nominated subcontractor's skills and experience in the areas noted above and apply appropriate weightings.

Note: It is important that subcontractors work under the main contractor’s management systems to ensure management of all works in managed consistency.

A.1.4. CONTRACTOR PERFORMANCE MONITORING

Aspects which could be considered in monitoring contractor performance are the following:

- Process audit – audit of third-party contractor’s processes prior to undertaking the works;
- Onsite audit – audit of onsite work activities and compliance with agreed processes, plans and standards; and
- Clearly defined client Inspection test plan, during the contract development it is important to determine and document the level of interaction the CA is to be undertaking, as detailed below.

Table 1 Sample Inspection and Test Plan

Project: Lighthouses Repair				Contractor: xxxxx
Inspection review point /	Type of acceptance	Location	Transport required to site	Acceptance Criteria
Acceptance / inspection: D=Document Review, W=Witness, H=Hold Point, M=Monitor, MP=Linked to milestone payment				
Project management plan	D, H	N/A	N/A	<input type="checkbox"/> Review/approval of Project Management Plan by CA; <input type="checkbox"/> Review/approval of environmental, safety and quality management plans;
Design and procurement	D, H	N/A	N/A	<input type="checkbox"/> Electrical and AtoN design inline with applicable standards; <input type="checkbox"/> AtoN equipment procured includes relevant QA documentation regarding IALA compliance;
Heritage approvals and repair procedures	D, H	N/A	N/A	<input type="checkbox"/> Heritage approvals <input type="checkbox"/> Approving colour schemes <input type="checkbox"/> Qualifications of surface preparation techniques for heritage substrates
Plant and vessel (if applicable) prior to mobilisation	W, D	Mobilisation port	N/A	<input type="checkbox"/> Cleanliness of equipment and materials; <input type="checkbox"/> Any prefabricated items; <input type="checkbox"/> Storage of coating materials, fuels, oils etc;
Site establishment	W,D, MP	Lighthouse	Contractor to provide transport for CA inspector.	Work site established with the following items completed or in place: <ul style="list-style-type: none"> <input type="checkbox"/> scaffolding/encapsulation erected; <input type="checkbox"/> dust extraction installed; <input type="checkbox"/> temporary AtoN established; <input type="checkbox"/> all equipment on site; <input type="checkbox"/> first aid and environmental equipment at site and established; <input type="checkbox"/> coating materials at site; CA to review: <ul style="list-style-type: none"> <input type="checkbox"/> encapsulation system and extraction; <input type="checkbox"/> first aid preparedness; <input type="checkbox"/> SWMS implementation and induction of personnel; <input type="checkbox"/> Storage of coating materials, fuels, oils etc; <input type="checkbox"/> Bunding arrangements for equipment refuelling; <input type="checkbox"/> QA procedures, equipment and equipment calibration; <input type="checkbox"/> Worksite accommodation;

Project: Lighthouses Repair				Contractor: xxxxx
Inspection review point /	Type of acceptance	Location	Transport required to site	Acceptance Criteria
Acceptance / inspection: D=Document Review, W=Witness, H=Hold Point, M=Monitor, MP=Linked to milestone payment				
Completion of surface preparation	W, D, MP	Lighthouse	Contractor to provide transport for CA inspector.	<input type="checkbox"/> surface preparation meets requirement of The Coating Specification; <input type="checkbox"/> QA documentation; <input type="checkbox"/> photographic record of works; <input type="checkbox"/> safety/environmental documentation and implementation of control measures including asbestos removal; <input type="checkbox"/> requirement for any corrosion and timber rot repairs; <input type="checkbox"/> review of The Coating Specification if required;
Application of prime coat	W, D	Lighthouse	Contractor to provide transport for CA inspector.	<input type="checkbox"/> Stripe coat application; <input type="checkbox"/> Workmanship of applied coatings; <input type="checkbox"/> Coating thickness meets requirements of The Coating Specification; <input type="checkbox"/> QA documentation; <input type="checkbox"/> photographic record of works; <input type="checkbox"/> safety/environmental documentation and implementation of control measures including asbestos removal; <input type="checkbox"/> review of The Coating Specification if required;
Application of intermediate coat	W, D	Lighthouse	Contractor to provide transport for CA inspector.	<input type="checkbox"/> sealing of crevices <input type="checkbox"/> Stripe coat application; <input type="checkbox"/> Workmanship of applied coatings; <input type="checkbox"/> Coating thickness meets requirements of The Coating Specification; <input type="checkbox"/> QA documentation; <input type="checkbox"/> photographic record of works; <input type="checkbox"/> safety/environmental documentation and implementation of control measures including asbestos removal; <input type="checkbox"/> review of The Coating Specification if required;
Application of finish coat	W, D	Lighthouse	Contractor to provide transport for CA inspector.	Inspection on completion of application of finish coat, CA to review: <ul style="list-style-type: none"> <input type="checkbox"/> Stripe coat application; <input type="checkbox"/> Workmanship of applied coatings; <input type="checkbox"/> Coating thickness meets requirements of The Coating Specification; <input type="checkbox"/> QA documentation;
AtoN and electrical works /completion of works	W, D	Lighthouse	Contractor to provide transport for CA inspector.	<input type="checkbox"/> Electrical installation meets requirements of the specification and Electrical Standard; <input type="checkbox"/> Electrical installation workmanship; <input type="checkbox"/> Antenna and other equipment in correct location and orientation; <input type="checkbox"/> AtoN and solar power supply have been commissioned and operating appropriately; <input type="checkbox"/> Environmental inspection; <input type="checkbox"/> Photographic record of works;
Completion Report	D, MP	N/A	N/A	Review/acceptance of Contractors completion reports.

A.2. QUALITY CONTROL FOR THIRD-PARTY BUOY SERVICES

The form in Table 2 is an example of an extract from a QMS and highlights the information required by a contracting authority when a third-party contractor is engaged to complete buoy services including buoy construction, installation, maintenance or outage repair.

A.2.1. STRUCTURE DETAILS

Details of the buoy works required by the contracting authority should be provided to the third-party contractor, the form in Table 2 gives an example of the information required for a buoy to be constructed, installed, maintained and any outage repairs to be completed and recorded.

Specific details to be considered are as follows:

- Shore-based section to ensure the buoy is built to the correct specification and the maintenance schedule is appropriate for the location and type of buoy;
- Buoy Tender section to be completed/ updated by the buoy tender and should be prepopulated with site specific information (such as correct charted position, mooring arrangement information); and
- The buoy form may be classed as a 'live' document that is reissued and updated when the contracting authority requests works to be completed by a third-party contractor.

A.2.2. SCOPE OF WORKS

The Scope of Works (SOW) is to complete buoy construction, installation, maintenance and outage repair by the third-party buoy contractor as defined by the contracting authority, with the following considerations:

- Method statement, giving details of the works and how they are completed (as per 'General Comments' in the form below);
- Environmental considerations, including disposal of bio-foul; and
- Consideration of ecological impact to flora and fauna including any restricted access due to Marine Protected Areas (MPA) or fauna breeding areas versus Safety of Life at Sea requirements (specifically for outage repairs).

A.2.3. PREQUALIFICATION

Provision of buoy services may be under a pre-existing contract where the associated capabilities and competencies of the shore-based works area, vessel and crew have been agreed, however, if this is not in place the following should be considered before engaging a third-party contractor to complete buoy services:

- Shore-based works area facilities, capabilities and training for buoy construction;
- Capability and suitability of vessel to complete the works;
- Crew capabilities and training for the buoy works;
- Crew familiarity with the area of buoy work, such as tidal and bathymetry considerations;
- Spares required by the buoy tender to complete the works; and
- Agreed document sharing and transfer of information to ensure the works are completed as required.

A.2.4. CONTRACTOR PERFORMANCE MONITORING

Contractor performance monitoring could include the following:

- The completed buoy form returned to the contracting authority to ensure the records are updated and scheduling for maintenance or further works can be completed;
- Photographs of before, during and after the works can be used as evidence of the works undertaken;
- On site (shore-base) visits/ audits by the contracting authority to assess build quality; and
- On vessel visits/ audits by the contracting authority to inspect the buoy installation or maintenance works being completed.

Table 2 Buoy Services Quality Control Form

BUOY DATABASE FORM

TO BE COMPLETED BY SHORE BASE					
LOCATION (Name):	Outfall Buoy No 1		AREA:	Anytown	
CONTRACTING AUTHORITY OR CONTRACT:	Contract		CONTRACT	Water Company	
TYPE OF BUOY:	Special Mark		CLASS:	4	
TYPE OF SERVICE:	Renewal	Casualty	Service	SERVICE/REPLACE SCHEDULE	Annual/Water Company dependant
TOP MARK FITTED:	Yes		NEXT REPLACE DATE:	N/A	
BUOY SUPERSTRUCTURE NO	N/A		BUOY BODY NO	N/A	
RADAR REFLECTOR:	No		LUGS TESTED:	N/A	
LIGHT BATTERY TYPE & QTY:	Self-Contained Lantern		RACON BATT TYPE & QTY:	N/A	
BATTERY ID NO'S:	Self-Contained Lantern				
SOLAR PANEL NO'S:	Self-Contained Lantern				
SOLAR PANEL WATT:	4 x 5W		LANTERN NO:	Unknown	
LANTERN TYPE:	BRIGHTLIGHT Self contained		BLUETOOTH:	NO	
CHARACTER:	Fl.Y.5s		RACON FITTED:	NO	
AIS FITTED:	NO		RACON SERIAL NO:	N/A	
MONITORING FITTED	NO		RACON CHARACTER:	N/A	
MMSI NUMBER:	N/A				
TO BE COMPLETED BY BUOY TENDER					
VESSEL:	Buoy Tender Star		DATE OF VISIT:	05-05-2020	
MASTER:	Capt. Smith		2/O:	D. Jones	
POSITION VERIFIED	Yes		CHART NUMBER:	3126, 3220	
LATITUDE WGS84:	25° 36.936'N		LONGITUDE WGS84:	025° 45.283'W	
CLEANED LANTERN	Yes		CLEANED BUOY:	Yes	
WEIGHTED SKIRTS FITTED:	No		BRIDLE:	2M Y	
CHAIN SIZE & LENGTH	25mm x 50M		DEPTH IN METRES:	17.4M	
SINKER:	1T		DATE SINKER EXAMINED:	05/05/20	
WORKING PART :	19mm		AIS/RACON OPERATIONAL:	N/A	
SOLAR PANEL NO'S:	Self-Contained Lantern				

SOLAR PANEL VOLTAGE:	Self-Contained Lantern		
		LIGHT BATTERY VOLTAGE:	Self-Contained.
DATE LAST REPLACED:	N/A	NEXT SERVICE DATE:	05/2021
DATE LAST SERVICED:	05/05/20		
TO BE COMPLETED IN EVENT OF CASUALTY			
DATE/TIME REPORT RCV'D:		CASUALTY TYPE:	
SOURCE OF CASUALTY:			
DATE/TIME RECTIFIED / REPORTED TO			
PROCUREMENT SYSTEM STOCK NO ISSUED:	N/A		
GENERAL COMMENTS; (e.g., Amount of chain clenched into the mooring, No. of shackles & pins used etc.)			
0820 Buoy Tender Star arrived on station. 0826 Buoy decked for annual service. Service completed. Buoy cleaned & electrics tested & found in good order. 0850 Buoy re-laid in Charted Position 1 x Forelock used from ships stores (No Stock Number)			
FAULTS/DEFECTS FOUND DURING SERVICING; (e.g., defective solar panel).			
N/A			

CONTRACT BUOYWORK CHECKLIST

Only to be completed when Contract buoyage is carried out

The following checklist is to be completed during the servicing of all contract buoys and signed off by the Second Officer on completion of service.

<u>Lantern and Solar Panels</u>	
1. Does the lantern show any signs of damage	No
2. Are the cable glands and seals in good order	N/A
3. Is the flasher character as charted	Yes
4. Is the flasher unit in good order with no sign of dampness	Yes
5. Is all the connectors and cabling in good order	Connections are internal
6. Was a new bulb fitted (if applicable)	N/A
7. Do the solar panels show any sign of damage	No
<u>Buoy Body and Superstructure</u>	
8. Is the buoy body in good condition	Yes
9. Are the lifting eyes and mooring eyes in good condition	Yes
10. Is the superstructure securely attached to the buoy body (if applicable)	Yes
11. Are the daymark panels securely attached and free from damage	Yes
12. Several photos should be taken of all commercial buoys whether client or Contracting authority owned as part of information sent to Contract Manager	OK
I certify that the above checklist has been completed and full details of the work carried out along with photographs and any remedial actions undertaken and future recommendations are contained in the enclosed report.	

PHOTOS FOR CONTRACT BUOYS





