

EEP19 Input paper

Agenda item 10.5

Task Number 12 Quality Management

Author(s) David Jeffkins / Adam Hay

ENG9-2.1.18.2

Key Performance Indicators

1 SUMMARY

This document provides examples of key performance indicator (KPI) models that are currently in use in Australia and Papua New Guinea for measuring the performance of Aid to Navigation (AtoN) maintenance and management activities.

1.1 Action arising from the input of the document

The information contained in this paper may be useful for the EEP Committee's work in developing new IALA guidance on Key Performance Indicators for AtoN activities.

2 BACKGROUND

The objective of work item 10.5.4 Develop Guideline on Key Performance Indicators (Activity 12.2.1) is to develop a draft guideline on key performance indicators to assist members with measuring the performance of their AtoN activities.

3 DISCUSSION

This paper contains examples of Key Performance Indicator models that are currently in use in Australia and Ireland.

3.1 Australia

The Australian Maritime Safety Authority (AMSA) has an outsourced AtoN maintenance arrangement in place for the provision of AtoN maintenance services. This arrangement includes a performance framework for measuring the contractors performance against agreed operational and corporate performance criteria.

Table 1 – AMSA KPI Model, details the current AMSA KPI's for measuring contractor performance.

3.1.1 Operational Performance Criteria

- The following operational performance criteria are measured through the KPI process:
 - Standard of works
 - AtoN performance levels
 - Quality, safety and environment
 - General reporting requirements
 - Monthly, quarterly and annual reporting requirements
 - Project reporting requirements
 - Incident reporting requirements

3.1.2 Corporate Performance Criteria

- The following management plans are in place to ensure that the agreed contract outcomes are achieved and are also monitored through the KPI process:
 - Contract management plan
 - Risk management plan
 - Contract administration plan

- Audit program
- Quality, environment and safety management plan
- Transition and disengagement plans
- Human resource management plan
 - Staff management plan
 - Training management plan
 - Occupational health and safety plan
- Engineering management plan
- Engineering design review
- Licensing and certification

3.1.3 KPI Requirements

- KPI's are used to measure contractor performance over the contract period and are linked to an annual performance payment, which along with the monthly base fee, forms the annual contract price.
- KPI's are reviewed and agreed on an annual basis. The annual contract review process allows for KPI's to be altered to address issues or opportunities identified during the previous year.
- Performance against the agreed KPI's are reviewed, discussed and agreed on a quarterly basis.

3.1.4 AtoN Performance Levels

- Maintenance and fault/failure restoration strategies are required to be in place to achieve the agreed availability and repair times.
- Performance levels are calculated in accordance with AMSA and IALA guidelines and reported quarterly.
- Equipment availability and failure restoration time is measured from the issue and cancellation of maritime safety information (Auscoast Warning or ReefVTS failure notification).
- The contractor is not penalised for failures due to unforeseen events such as severe weather events, vandalism or natural disasters

3.1.5 Quality, Safety and Environmental Performance

- The contractor must maintain certification for quality, safety and environmental management systems.
- Lagging indicators such as number of lost time injuries or medical treated injuries are recorded but are not linked to performance payments. Incident and accident reporting information is a critical input to minimising future incidents. Any indicators that encourage non reporting should be avoided in performance payment based systems.
- Positive Performance Indicators (PPI's) or leading indicators are used to measure actions that the contractor takes to achieve its safety targets.
- Good performance against PPI's will lead to good safety outcomes. The following PPI's could be considered for use in a KPI framework:
 - Number of OHS training & programs
 - Incident reports - the numbers of days overdue: > 3 months
 - Hazard reports - the number of days overdue: > 3 months
 - Number of safety inspections/audits conducted
 - Percentage of sub-standard conditions identified and corrected
 - Percentage of employees with adequate OHS training.

Table 1 – AMSA KPI Model

No.	Item	Sub Item	Requirement	Q1	Q2	Q3	Q4	Measurement	Performance Measure		Weighting (%)
1	Availability										
	AtoN performance Comparison of actual and specified performance levels and response times	1	Category 1 Light => 99.8%					Days available averaged over 36 months	99.8%		
			MTTR =< 2 days					Average mean time to repair over 12 months	2 days		
		2	Category 2 Light => 99.0%					Days available averaged over 36 months	99.0%		
			MTTR =< 4 days					Average mean time to repair over 12 months	4 days		
		3	Category 3 Light => 97.0%					Days available averaged over 36 months	97.0%		
			MTTR =< 6 days					Average mean time to repair over 12 months	6 days		
		4	Racons => 99.6%					Days available averaged over 36 months	99.6%		
			MTTR =< 4 days					Average mean time to repair over 12 months	4 days		
		5	Met Ocean Sensors => 99.8%					Days available averaged over 36 months	99.8%		
			MTTR =< 2 days					Average mean time to repair over 12 months	2 days		
		6	DGPS => 99.8%					Days available averaged over 36 months	99.8%		
			MTTR =< 2 days					Average mean time to repair over 12 months	2 days		
		7	REEFVTS Radars => 99.6%					Days available averaged over 36 months	99.6%		
			MTTR =< 2 days					Average mean time to repair over 12 months	2 days		
		8	Unlit Beacons, Daymarks & Topmarks => 97.0%					Days available averaged over 36 months	97.0%		
			MTTR =< 6 days					Average mean time to repair over 12 months	6 days		
		9	AIS Base Stations => 99.6%					Days available averaged over 36 months	99.6%		
			MTTR =< 2 days					Average mean time to repair over 12 months	2 days		
		10	Buoys Installed within 5 metres of charted position					All buoys to be installed within tolerance	=< 5m		

No.	Item	Sub Item	Requirement	Q1	Q2	Q3	Q4	Measurement (Note: the sub item notes detail the scope, deliverable and timeframe for completion)	Performance Measure	Weighting (%)
2	Innovation and Information Management									
	Maintenance Methodology and New Technology	1	Agreed maintenance and management changes leading to advantages to both the Contractor and AMSA					Implementation of maintenance and management improvements that value add to the delivery of contract services agreed by both parties See Sub Item 1 notes	5 or more implementations	
									3 or 4 implementations	
									1 or 2 implementations	
	Computerised Maintenance Management System (CMMS) – Improvement Opportunities	2	Load job plan data for site access report					See Sub Item 2 notes		
			Asset and location updates					See Sub Item 2 notes		
			Heritage fabric register					See Sub Item 2 notes		
			AMSA CMMS upgrade assistance					See Sub Item 2 notes		
	CMMS – Data Validity	3	Scheduled – Electronic Data interchange					See Sub Item 3 notes		
	Management Reporting	4	Maintenance component					See Sub Item 4 notes		
			Project component – design input					See Sub Item 4 notes		
			Asset management strategy					See Sub Item 4 notes		
			AIS AtoN evaluation					See Sub Item 4 notes		
			AtoN WAN improvements					See Sub Item 4 notes		
			Provision of technical input into IALA initiatives					See Sub Item 4 notes		
	Annual Work Program	5	Progress against plan					See Sub Item 5 notes		

No.	Item	Sub Item	Requirement	Q1	Q2	Q3	Q4	Measurement (Note: the sub item notes detail the scope, deliverable and timeframe for completion)	Performance Measure		Weighting (%)
3	Quality, Safety, Environment and Heritage Management										
	Certification	1	Existing certification to be retained					Certification retained - checked at audit and copies of certification to be supplied in annual report See Sub Item 1	All retained		
									ISO 9001		
									ISO 14001		
									AS 4801		
	Major and Minor non conformances (number of sites to be audited is approx 40 +10 heritage sites)	2	To reduce the number of minor or major non conformances issued					1 x Major non conformance = score 4 1 x Minor non conformance = score 1 See Sub Item 2 notes	=< 3 points per year		
									=< 6 points per year		
									=< 8 points per year		
	Heritage Sites	3	Details of all heritage work to be presented to AMSA along with overall costs as part of AMSA's adherence to the Heritage act					Detailed list of heritage work completed and cost See Sub Item 3 notes Heritage maintenance works that contributes to the maintenance and heritage aspects of the AtoN e.g. paint striping, reinstating heritage fabric i.e. brass vents, signage etc.			
			Continue heritage management initiatives								
	AMSA Assets	4	Management of AMSA assets and inventory					Annual check during audit See Sub Item 4 notes			
			QEL update and equipment price updates for annual asset revaluation					See Sub Item 4 notes			
Environment/Safety	5	AtoN structure access improvements					See Sub Item 5 notes				
		Hazardous substance removal					See Sub Item 5 notes				

			Reporting and closeout of OHS incidents.					See Sub Item 5 notes			
--	--	--	--	--	--	--	--	----------------------	--	--	--

3.2 Papua New Guinea

The Papua New Guinea National Maritime Safety Authority (NMSA) has also adopted an arrangement where maintenance is outsourced to a suitably qualified contractor. The performance framework is similar to Australia in that it allows measurement of the contractor's performance against agreed operational performance criteria.

3.2.1 Operational Performance Criteria

- The following operational performance criteria are measured through the KPI process:
 - Availability
 - Maintenance methodology and introduction of new technology
 - Quality, safety and environment improvement proposals
 - Liaison with traditional communities
 - Information management
 - Communication and Reporting

3.2.2 KPI Requirements

- The KPI's are used to measure contractor performance over the contract period and are linked to an annual performance payment, which along with the monthly base fee, forms the annual contract price.

3.2.3 AtoN Performance Levels

- Maintenance and fault/failure restoration strategies are required to be in place to achieve the agreed availability and repair times.
- Performance levels are calculated in accordance with NMSA and IALA guidelines and reported quarterly.
- Due to issues with vandalism and the difficulty in confirming outages on isolated sites, failure restoration time is measured from the time NMSA issue a direction to attend to an outage, after they have confirmed the outage, identified the cause. The response is not triggered by the Notice to Mariners.
- The contractor is not penalised for failures due to unforeseen events such as severe weather events, vandalism or natural disasters

3.2.4 Improvement Proposals

- The contractor is required to submit a minimum number of improvement proposals, changes or suggestions for developing quality, safety and environmental management or improving community liaison and engagement programs.
- Measurement is based on the amount of feasible proposals submitted in each quarter and identified in the quarterly report. All proposals count towards performance measure unless rejected in writing by NMSA.

3.2.5 Quality, Safety and Environmental Performance

- The contractor must maintain 3rd party certification for quality management systems or must provide significant evidence that they are under the process of working towards 3rd party ISO9001 accreditation.

4 ACTION REQUESTED OF THE COMMITTEE

The Committee is requested to:

- 1 Review this paper for relevance in the development of a new IALA guideline on KPI for AtoN activities.