BHP Mitsubishi Alliance

BMA-SPC-0136

BMA SPECIFICATION

In Vehicle Monitoring System (IVMS)

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Business Owner: BMA BNE AET Superintendent G&TS Standards

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1 Introduction

1 The In Vehicle Monitoring System (IVMS) is a device installed in the vehicle to monitor driver and vehicle behaviour. The IVMS monitors and reports on driver and vehicle behaviour, including location, via a software application.

2 The IVMS is deployed as a tool for risk management to alert an operator to events they may or may not be aware of, and to prompt an operator to ensure the safety of themselves and others. The IVMS provides feedback to Supervisors enable improvement of driver behaviour and ultimately improve driver safety standards.

1.1 Purpose

3 This document specifies the minimum requirements for the BMA In Vehicle Monitoring System (IVMS). which IVMS providers and Contract partners must refer to when specifying requirements for an IVMS.

1.2 Scope

4 This Specification applies to all BMA and Contractor vehicles operated at BMA managed operations in both surface and underground operations (excluding vehicles modified for underground use). This Specification also applies to BMA non-mining sites and any functions that operate the below-mentioned vehicles in the course of work for BMA:

a Light Vehicles (LVs),

b Buses, including High Occupancy Vehicles (HOVs), and

c Medium Vehicles which includes, Highway Rigid Vehicles (HRVs).

5 This Standard does not apply to Earthmoving Equipment, mobile equipment, or auxiliary equipment.

2 IVMS Requirements

1 The IVMS unit must be securely and permanently installed in the vehicle.

2 All IVMS installation, repairs and recovery activities must be performed by an appropriately trained, competent and authorised technician, as required by the IVMS supplier and meet the requirements stipulated in this Specification. Records relating to the installation and certification of the IVMS unit must be maintained by the IVMS provider. These records shall be made available to BMA upon request for auditing purposes.

3 The absence of a permanently fixed and compliant IVMS unit or inability to meet any of the exception or reporting requirements must be treated as a deviation from this specification. This includes the use of portable IVMS units.

2.1 IVMS Attributes

4 Any IVMS unit installed in vehicles must record a wide range of driver and vehicle performance indicators. For any IVMS system chosen the following minimum attributes are required:

a Positively identify the driver of the vehicle via Individual Driver Key or Site Access Card

b Activate an audible alarm if a driver is not identified to the vehicle via the driver identifier

c Activate an audible alarm if the driver exceeds set parameters of the system

5 Monitors the vehicle for:

- **a** GPS location data communicated by 4G, 5G or satellite (where fitted)
- **b** Speed
- **c** Distance travelled
- **d** Harsh acceleration
- **e** Harsh cornering
- **f** Harsh braking
- **g** Driver seat belt engaged
- **h** Impact / Roll Over (Critical Vehicle Alert)
- **i** Transmit data via 4G and/ or 5G network. When out of network range the system must be able store data and forward when back in range.
- **j** Transmit data via satellite network (where fitted e.g. for High Risk LVs)
- **k** Historical and real time vehicle tracking including utilisation
- **l** Capture second by second vehicle information if any traffic event requires investigation
- **m** Automatic or manual report generation, tailored to specific user/department
- **n** Enable a weekly automated Driver Safety Scorecard
- **o** Initiate emergency procedures in the event of critical vehicle alert.

6 The IVMS must receive and apply geofence information and regular updates in the form of SQL database, Excel, Shapefile or other approved equivalent.

7 To ensure consistency in reporting, the geofence information must be uploaded in a format that cannot be edited by contractors and non-authorised personnel.

8 The IVMS must process events and exceptions based on geofence settings.

9 Data must be retained for a minimum of one (1) year and shall be recoverable and capable of being presented in a suitable format to support reporting and investigation purposes.

10 The IVMS device must perform frequent IVMS health checks to identify disconnections and faulty units.

11 The IVMS must send alerts via email to agreed recipient(s).

12 The IVMS must display historical and real time tracking of a vehicle's trip history.

13 If the selected IVMS fails to meet all these requirements, an exemption may be sought. Refer to the ***BMA PRO Vehicles and Mobile Equipment Compliance (BMA-PRO-0067)*** for details of the Non-compliant equipment exemption procedure.

2.2 System Rules

14 The IVMS must monitor and report on the driver behaviour thresholds / rules.

15 The minimum rules listed in Table 1 must be set up through the IVMS software across BMA

16 If any changes to these system rules are required due to operational requirements, BMA (Owner) approval is required along with a risk assessment as per the BMA PRO Risk Management and Management of Change (MoC) as per the BMA PRO Management of Change.

Event Groups	Parameter Description	Standard
Safety	Over Speeding > 5 kph > 5 sec	Speed compared to speed limit > 5 kph > 5 seconds (not reportable)
	Over Speeding > 10 kph > 10 sec	Speed compared to speed limit > 10 kph > 10 seconds (reportable)
	Excessive Over Speed > 20 kph > 10 sec	Speed > 20 km/h > 10 seconds above the limit (reportable and notification to Line Leader)
	Over Speeding in Reverse	Reverse speed > 20 km/h > 10 seconds
	Harsh Braking	Braking > 12 km/h/s > 10 seconds
	Harsh Acceleration	Acceleration > 12 km/h/s > 10 seconds
	Harsh Cornering	> 0.47G or < -0.47G (as recommended by IVMS provider)
	Vehicle Operator Driving without a Seatbelt	Unbuckled and Speed > 5 km/h > 5 seconds
Advanced	Possible Accident (5G)	Acceleration forward, breaking, or side to side > 5G
	Possible Rollover	Acceleration up or down < -0.9G
Fatigue Management	Continuous Driving > 2h15min	Driving continuously for greater than 2 hours without a 15 minute rest

Table 1: Standard Events

3 Driver and Vehicle Requirements

1 The following data relating to the driver and vehicle must be captured in the vehicle and driver profiles at a minimum.

3.1 Minimum Driver Information

2 Driver First Name

3 Driver Last Name

4 Unique identifying information e.g. Employee Number / Email Address

5 Company

6 Site(s) group e.g. Saraji Mine

7 Department / Team e.g. SRM Production

3.2 Minimum Vehicle Information

8 Vehicle Unique Name e.g. Registration Number

9 Vehicle Identification Number

10 Vehicle Registration

11 Make

12 Model

13 Company

14 Site(s) group e.g. Saraji Mine

15 Department / Team e.g. SRM Production.

4 Reporting Attributes

1 It is a requirement that the IVMS must produce reports on an ad-hoc and/or scheduled basis.

2 As a minimum, the following reports shall be produced (including from other Contractor IVMS solutions) to BMA:

- **a** Weekly Organisational IVMS Exception Report (see Appendix 1)
- **b** Monthly Organisational Performance Report (see Appendix 2)

3 Driver performance Reports generated weekly and automatically sent to relevant managers and supervisors (used to monitor driver performance and for driver coaching).

5 Responsibility Matrix

Role	Responsibilities	Description of Task
SSE	Responsible	SSE is responsible for the compliance and adherence of this specification. SSE must ensure adequate resources and equipment for the effective implementation and compliance to this specification.
Manager	Adherence	Must provide adequate resources and equipment for the effective implementation and compliance to this specification.
Superintendent	Adherence	Must ensure the requirements of this specification are implemented to achieve and maintain compliance.
Compliance	Adherence	Ensure all vehicles listed in this specification (including Contractor vehicles) must have a functioning IVMS installed.

Table 2: IVMS Responsibility Matrix

6 Terms and Definitions

Term	Definition
GPS	Global Positioning System
HOV	High Occupancy Vehicle (Bus) – A vehicle that can carry 9 or more people. As per the BMA STD Vehicles and Mobile Equipment Compliance.
HRV	Highway Rigid Vehicle
IVMS	In-Vehicle Monitoring System
km/h	Kilometres per hour
km/h/s	Kilometres per hour per second
LV	Light Vehicle – Road going vehicle with a GVM less than 4.5t. As per the BMA STD Vehicles and Mobile Equipment Compliance.
MoC	Management of Change
SSE	Site Senior Executive appointed in accordance with the relevant legislation
Medium Vehicle	Road going vehicle with a GVM greater than 4.5t. As per the BMA STD Vehicles and Mobile Equipment Compliance.
Bus	High Occupancy Vehicle (Bus) – A vehicle that can carry 9 or more people. As per the BMA STD Vehicles and Mobile Equipment Compliance.
m/s^2	SI metric system standard unit of measure for linear acceleration meaning metres per second per second.
G (or g)	Where used following a number means acceleration due to gravity i.e. 9.81 m/s^2
‘Must’ or ‘Shall’	Where used, the associated requirement is mandatory.
‘May’	Where used, the associated requirement or action is recommended, but at the discretion of the person responsible.
‘Should’	Where used, the associated action or requirement is not mandatory, but is recommended.

Table 3: Terms and Definitions

7 References

Controlled Document Number	Title
BMA-STD-0005	BMA STD Vehicles and Mobile Equipment Compliance
BMA-PRO-0067	BMA PRO Vehicles and Mobile Equipment Compliance
BMA-PRO-0053	BMA PRO Risk Management
BMA-PRO-0076	BMA PRO Management of Change
	In – Vehicle Monitoring Systems – Specification. Queensland Natural Gas Exploration and Production Industry Safety Forum (Safer Together)
TBA	BMA IVMS Procedure (to be confirmed / developed)

Table 4: List of Reference Documents

8 Version Management

Version	Details	Date
1.0	Initial release	13 December 2024

Table 5: Version Management

9 Appendix 1 – Weekly Organisational IVMS Exception Report

[Company Name]	Date: 29 Sep 2024
From	22 Sep 2024
To	28 Sep 2024
Days	7

Vehicle	Driver	Location / Zone	Rule	Date	Start Time	Duration	Distance	Details
Vehicle ID	Driver Name	Site / Location	e.g. Speeding	27 Sep 2024	8:04:04 AM	0.03	7.68	Driving faster than 100 km/h (Max speed: 131 km/h)

10 Appendix 2 – Monthly Organisational IVMS Performance Report

Reporting Period	Company	General Data			Safety Events					Fatigue Management
	(Contractor / Subcontractor)	Total KM Driven	Number of Vehicles	Number of Drivers	Reportable Speed Event	Harsh Breaking	Harsh Acceleration	Harsh Cornering	Driving without a Seatbelt	Continuous Driving > 2h15m
January										
February										
March										
April										
May										
June										
July										
August										
September										
October										
November										
December										