IPLOCA Health & Safety Award 2016

Safety Innovation Submission

:: Project Safety Map ::

6 May 2016

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1.0 NOMINATION DETAILS

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2.0 SUMMARY

This submission has been prepared by Spiecapag Lucas for consideration in the IPLOCA Health & Safety Award 2016. The submission relates to the Spiecapag Lucas Project Safety Map which was implemented on the Eastern Goldfields Pipeline project in Western Australia.

Spiecapag Lucas is a fully integrated Joint Venture between Spiecapag Australia Pty Limited and Lucas Engineering and Construction Pty Limited. These entities are both subsidiaries of Full IPLOCA members Spiecapag SA and AJ Lucas Group Limited. It has been established for more than 18 years.

The Project Safety Map is a visual reporting tool which tracks lead indicator performance against established targets. This map is produced and circulated on a monthly basis and includes photographs of achievements, HSE initiatives/improvements and project progress milestones. The statistics are presented on a per-crew basis as well as including an overview of the project statistic totals.

This is a simple way of communicating performance information to internal and external stakeholders while also providing a mechanism for sharing of safety improvements, initiatives and other milestones.

The Project Safety Map is used by the project and construction management teams to engage with supervisors and crews on a periodic basis regarding performance against targets. This gives an opportunity for supervisors to encourage participation of their crew in the areas required as a proactive approach.

The breakdown of statistics per crew allows the project management team as well as field safety operatives to target communications, observations and coaching strategies towards areas identified requiring improvement.

Not only does the template stimulate competition between crews but it also provides recognition of the efforts that workers have made. This is particularly important in stimulating improvement through increased use of the risk management tools which generate the lead indicator statistics.

Implementation of the Project Safety Map on the EGP project resulted in improved participation in the use of onsite risk assessment and hazard identification tools. Use of the SLAM personnel risk assessment tool increased from 87% of target in March to achieve 143% against target for June. Similarly, application of the Hazard Report increased from 10% of target in March to 109% against target for June. Although Safety Observation number did not increase each month, the monthly target was consistently achieved. As such, efforts were focused on improvement of the under-performing areas being SLAM and Hazard Report.

Overall the use of the Safety Map not only increased participation rates but also improved the safety of the site itself. As a result of increased identification of hazards, a range of issues were able to be addressed before personnel were exposed to these, potentially causing an incident. Use of the SLAM tool resulted in increased situational awareness of personnel and continued reinforcement of the concept of checking the work environment for changes.

3.0 SAFETY INNOVATION – PROJECT SAFETY MAP

The Project Safety Map is a visual reporting tool which tracks lead indicator performance against established targets. The statistics are presented on a per-crew basis as well as including an overview of the project statistic totals.

The map is set out to include the following components:

- Visual representation of pipeline construction activities (in sequence)
- Key project safety statistics (month and cumulative)
- Lead indicator statistics per crew (month and cumulative)
  - Includes 'traffic light' visualisation to indicate performance against monthly target
- Hazard/Incident Triangle (month and cumulative)
- Photos of key pipeline activities/locations, safety initiatives, social events

The graphic layout of the map allows the full extent of activities and construction phases to be visualised. Only key safety statistics are represented to provide focus on those proactive activities which field crews undertake and are measured against.

This simplified reporting method allows all personnel to quickly form a view of performance across the project, and also in individual crews, without sifting through reports, extensive statistics and wordy statements. This is particularly valuable for managers and supervisors to engage with personnel who are not inclined to read/analyse bulk information or whose literacy is limited.

As activities start on the project, targets are listed against the crew's lead indicators and these are reported monthly. When activities are completed prior to the reporting period, or if they have not started, cumulative figures remain visible however the target column and 'traffic light' indication becomes blank to indicate no activity.

Where new activities are added to the project scope, or planned activities are removed from the project scope, graphic representations are easily added or removed for each reporting period as applicable.

4.0 TEMPLATE DEVELOPMENT

The Project Safety Map was developed in readiness for the project during the pre-mobilisation planning phase. The template began as a basic layout incorporating:

- Graphic depictions of planned construction activities in sequence
- Performance table of agreed lead indicators per crew (month and cumulative)
- Project statistics table (month and cumulative)
- Hazard/Incident Triangle (month and cumulative)
- Clear space for population with relevant photos

Over the project, components have been amended and other added to suit the needs of the project. These include:

- Inclusion of additional activities (ie. HDD/Special Crossings) and crews (PMT)
- Separation of activities (ie. Lowering-In and Tie-Ins) when responsibility for these crews was split between 2 supervisors (previously 1 supervisor)
- Modification of the crew performance tables to include only lead indicators with assigned targets
- Addition of the target column with 'traffic light' visualisation
- Monthly trend analysis graphs showing project performance against targets for each of the three leading indicators

5.0 APPLICATION ACROSS INDUSTRY

The Project Safety Map as a visual reporting tool can be used across the petroleum and gas industry with simple context-specific modifications to layout, graphics and the particular statistics that are reported by a company.

Pipeline construction is typically linear in nature, henceforth the format in which it is displayed. However, the map can just as easily be used to show performance across a company which conducts activities in a static manner or location. Photos, map overlays and other tools could be combined to add further visual interest and personalisation to the Safety Map. Some examples have been devised in the appendices attached.

6.0 EFFECTIVENESS IN IMPROVING THE SAFETY OF PIPELINE INDUSTRY PERSONNEL

The Project Safety Map was developed as a tool for simplifying reporting to field crews for the purposes of providing feedback and engaging supervisors to address performance of crews.

Over the period of the project, Spiecapag Lucas have adapted the Project Safety Map layout as well as the method in which the map is used to effect improvement in lead indicator performance and participation rates.

Specifically, these adaptations have included:

- Adjustment to the way that activities are segregated and reported to align with supervisor allocations
- Inclusion of monthly trend analysis graphs for each of the three leading indicators
- Scheduled weekly meetings held between project/construction management teams and supervisors to review current performance throughout the reporting period

As a result of these modifications to the template, and the consultative processes in place to track performance, participation rates of personnel have improved and this improvement has been sustained.

6.1 Behaviour Modification and Improved Attitudes

Furthermore to the simple statistics, after review of completed risk management tools which make up the leading indicators (SLAM, Hazard Report, and Safety Observation), it is evident that the processes are being applied appropriately. Information recorded is of a high standard showing personnel are engaged when using the tools and there is no evidence of a 'tick and flick' mentality just to reach the targets.

Such engagement has effected improvement in the attitudes of personnel towards safety matters and subsequently improved the safety of personnel on the project:

- Personnel are assessing risks on the site at the time of the task to identify issues
  - Improved situational awareness
- The safety culture is one of engaged personnel who use the systems which are in place
- Hazards are identified across the project and reported so action can be taken to address these
- Personnel request to see the outputs of the map throughout the reporting period to see how they are tracking
- More personnel are having safety conversations on site and making suggestions to their colleagues about when the risk management tools should be used

6.2 Lead Indicator Targets

Targets for application of the risk management tools were adopted by the project team, based on the minimum targets set at a corporate level. Those corporate targets assume a consistent manning level of each operation or activity over the reporting period and a continual work schedule. On the EGP project, the following variances were present:

- 28 days on / 9 days off roster, resulting in inconsistent man-days per month;
- Inconsistent crew manning levels due to staged mobilisation/demobilisation, personnel rotation and/or re-deployment; and
- Activities not undertaken for an entire reporting period(s).

As a result, SCL adjusted monthly targets to reflect actual man-days worked for each activity. These targets were forecast weekly to allow feedback to be given to supervisors for monitoring performance.

6.3 Results Achieved

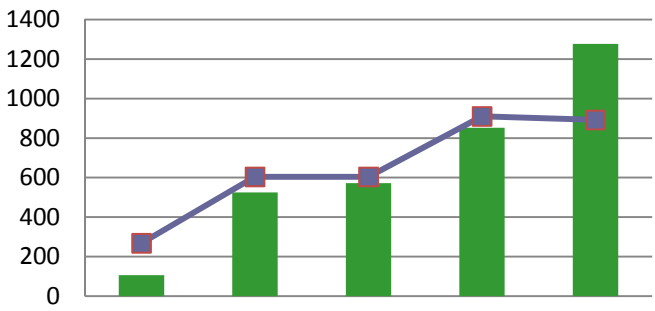
The table below shows the improvement in lead indicator performance across the reporting periods, as a result of the Project Safety Map and associated consultation processes:

	MARCH		APRIL		MAY		JUNE	
	Total	% of Target	Total	% of Target	Total	% of Target	Total	% of Target
SLAM	525	87 %	572	94 %	852	93 %	1277	143 %
Hazard Report	8	10 %	27	33 %	82	66 %	120	109 %
Safety Observation	171	209 %	117	143 %	252	203 %	165	150 %

6.3.1 SLAM

A personal risk assessment tool for all workers, the SLAM is used to assess a task and the work environment for risks associated with a planned task. This may be triggered by a new task, an irregular task, a change in conditions while completing any task (including routine), and are undertaken prior to specified activities.

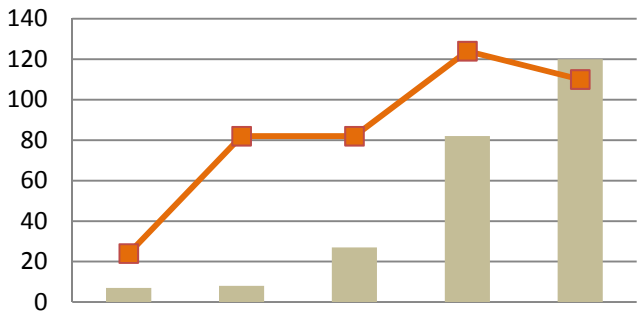
SLAM use did not reach the target until June (recent reporting period at time of writing), however participation was near target and improved consistently from April.



	Feb-15	Mar-15	Apr-15	May-15	Jun-15
SLAM	106	525	572	852	1277
Target (SLAM)	268	604	604	910	892

6.3.2 Hazard Report

Hazard reporting was significantly under target during February and March but showed significant improvement in May and reaching the target in June.

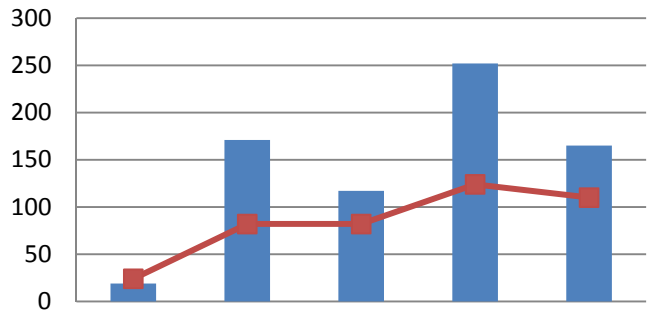


	Feb-15	Mar-15	Apr-15	May-15	Jun-15
Hazard Report	7	8	27	82	120
Target (Haz)	24	82	82	124	110

6.3.3 Safety Observation

Safety observation is a tool used to engage personnel and give feedback on their behaviour while conducting a task. These can be used by any personnel and are typically manager-subordinate, supervisor-subordinate, peer-peer interactions.

While numbers of safety observations fluctuated over the project – not showing linear improvement – participation eclipsed the target every month from March to June inclusive. As a result of this, efforts were focused on participation in the SLAM and Hazard Reporting processes which achieved improvement in those results in the same term.



	Feb-15	Mar-15	Apr-15	May-15	Jun-15
Safety Observation	19	171	117	252	165
Target (SOB)	24	82	82	124	110

7.0 COST EFFECTIVENESS

The Project Safety Map is a relatively simple tool and is easy to integrate into existing reporting process. Spiecapag Lucas use an Excel spreadsheet tool for capturing statistical data. Separate tabs in the Excel file format the data into the statistics tables as well as generate the monthly trend graphs.

The base template is designed in Visio which then has the graphical elements added each month. Visio allows alignment of different elements to the underlying grid marks to produce a more consistent, clean look, however a Safety Map tool could be produced in a range of programs or formats. These graphical base templates could be developed in Word, Excel, PowerPoint or similar.

Given the almost exclusive use of the Microsoft Office or Apple Productivity software suites, cost to develop and implement the Safety Map is minimal, relying on effective administration of safety statistics as well as collation of other visual elements through the reporting period. This is easily achieved in a central file.

Spiecapag Lucas have had the Project Safety Map printed in A0 and A1 sizes each month for display around the project, with a typical cost of around AUD$20 per copy.

Noting the improvement that this tool has effected when progress is reviewed throughout the period, the Safety Map has proved very cost effective.

The underlying tools that are used to produce the Project Safety Map could be easily shared throughout the industry as these are electronic documents. Modifications could be made on the basis of preference by the end user.

8.0 APPENDIX 1 – PROJECT SAFETY MAP (JUNE 2015)

EGP Project Safety Map :: June 2015

APA Group

Survey	Month	Target	Project
SLAM	16	24	109
Hazard Report	6	4	14
Safety Ob	13	4	37

PMT	Month	Target	Project
SLAM	25	0	72
Hazard Report	40	14	71
Safety Ob	26	14	122

Plant & Logistics	Month	Target	Project
SLAM	118	92	517
Hazard Report	5	8	28
Safety Ob	26	8	166

Camp	Month	Target	Project
SLAM	208	36	210
Hazard Report	3	6	5
Safety Ob	3	6	8

Reinstatement of KP 43 Hill

Monthly Safety Campaign focused on Line of Fire

HSE Pizza Night at Sunrise Dam

Stringing Crew, Spread Boss **Gordon Emery** and Supervisor **Guilhem Barbeau** at KP Final with the last pipe strung on the EGP Project – 23 June 2015

EGP Project Total	Month	Project
Injury Free Days	30	250
Injury Free Man Hours	71,466	249,841
Kilometres Driven	165,777	909,038
SLAM	1,378	3,317
Hazard Report	106	341
Safety Ob	165	727
Actions Opened	208	644
Actions Closed	156	556
Improvements	78	174
NM	1	14
ED	0	1
VEH	1	2
FAI	0	1
LTI / MTI	0	0

Actions - Corrective actions logged in CAR
Improvements - Suggestions received
NM - Near Miss
ED - Equipment Damage
VEH - Vehicle Damage
FAI - First Aid Injury
LTI - Lost Time Injury / **MTI** - Medical Treatment

De-Skid & Plug	Month	Target	Project
SLAM	17	24	119
Hazard Report	2	3	2
Safety Ob	5	3	27

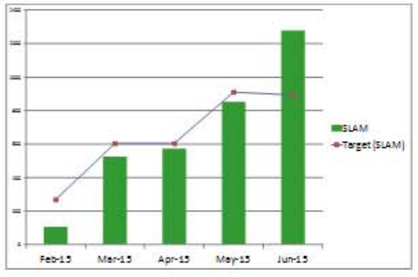
RoW *Includes Reinstatement 1st days	Month	Target	Project
SLAM			271
Hazard Report			6
Safety Ob			123

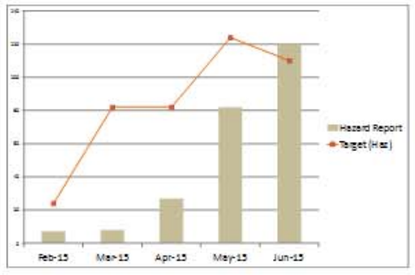
Stringing	Month	Target	Project
SLAM	91	112	281
Hazard Report	8	13	21
Safety Ob	17	13	56

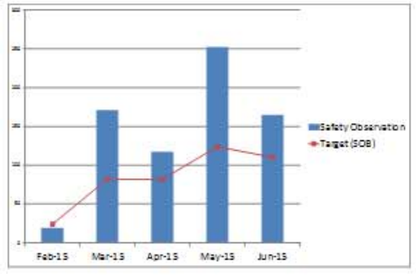
Bending	Month	Target	Project
SLAM	20	40	113
Hazard Report	3	4	4
Safety Ob	2	4	12

Welding & NDT	Month	Target	Project
SLAM	184	108	313
Hazard Report	8	12	10
Safety Ob	14	12	30

Field Joint Coating	Month	Target	Project
SLAM	111	102	238
Hazard Report	6	9	7
Safety Ob	9	9	22

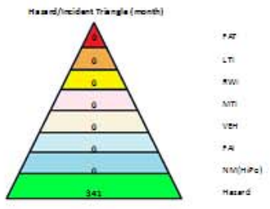






Emergency Crew	Month	Target	Project
SLAM	22	12	170
Hazard Report	1	2	7
Safety Ob	1	2	11

Trenching *includes Rock Detection	Month	Target	Project
SLAM	87	92	153
Hazard Report	4	8	6
Safety Ob	4	8	18



Hazard/Incident Triangle (project)

Hydrotest	Month	Target	Project
SLAM	14	24	20
Hazard Report	2	3	2
Safety Ob	16	3	16

Reinstatement	Month	Target	Project
SLAM	93	40	93
Hazard Report	3	4	3
Safety Ob	2	4	2

Bedding, Padding & Backfill	Month	Target	Project
SLAM	120	72	159
Hazard Report	4	7	6
Safety Ob	9	7	10

HDD & Special Crossings	Month	Target	Project
SLAM			47
Hazard Report			2
Safety Ob			6

Tie Ins	Month	Target	Project
SLAM	67	42	113
Hazard Report	8	6	14
Safety Ob	3	6	3

Lowering-In	Month	Target	Project
SLAM	84	72	144
Hazard Report	17	7	33
Safety Ob	15	7	20

9.0 APPENDIX 2 – PROJECT SAFETY MAP (MAY 2015)

EGP Project Safety Map :: May 2015

APA Group

Survey	Month	Target	Project
SLAM	28	24	94
Hazard Report	4	4	9
Safety Ob	15	4	24

PMT	Month	Target	Project
SLAM	27	0	46
Hazard Report	16	14	31
Safety Ob	122	14	122

Plant & Logistics	Month	Target	Project
SLAM	98	102	399
Hazard Report	10	12	23
Safety Ob	24	12	140

Camp	Month	Target	Project
SLAM	2	42	2
Hazard Report	2	7	2
Safety Ob	5	7	5

Safety Re-start presentations held at Sunrise Dam and Laverton on the 1st day back on roster

EGP Project Total	Month	Project
Injury Free Days	31	220
Injury Free Man Hours	68,551	178,375
Kilometres Driven	297,246	743,261
SLAM	852	2,120
Hazard Report	82	249
Safety Ob	252	537
Actions Opened	151	436
Actions Closed	154	400
Improvements	35	96
NM	2	13
ED	0	1
VEH	1	2
FAI	0	1
LTI / MTI	0	0

Actions - Corrective actions logged in CAR
Improvements - Suggestions received
NM - Near Miss
ED - Equipment Damage
VEH - Vehicle Damage
FAI - First Aid Injury
LTI - Lost Time Injury / **MTI** - Medical Treatment

Filling of Turkey's Nest

De-Skid & Plug	Month	Target	Project
SLAM	29	42	107
Hazard Report	0	6	0
Safety Ob	7	6	30

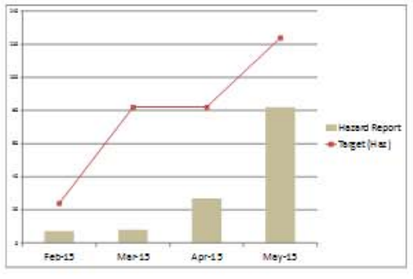
RoW *Includes Reinstatement 1st days	Month	Target	Project
SLAM	78	92	301
Hazard Report	3	8	6
Safety Ob	39	8	123

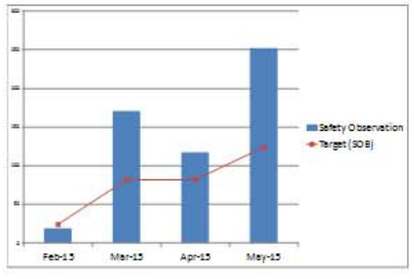
Stringing	Month	Target	Project
SLAM	98	112	190
Hazard Report	14	13	21
Safety Ob	4	13	4

Bending	Month	Target	Project
SLAM	54	42	97
Hazard Report	1	6	1
Safety Ob	4	6	10

Welding & NDT	Month	Target	Project
SLAM	83	112	159
Hazard Report	4	13	5
Safety Ob	13	13	16

Field Joint Coating	Month	Target	Project
SLAM	81	72	127
Hazard Report	0	7	1
Safety Ob	6	7	19





Emergency Crew	Month	Target	Project
SLAM	69	12	142
Hazard Report	1	2	6
Safety Ob	1	2	10

Trenching *includes Rock Detection	Month	Target	Project
SLAM	36	72	66
Hazard Report	1	7	2
Safety Ob	2	7	14

Hydrotest	Month	Target	Project
SLAM	2	0	6
Hazard Report	0	0	0
Safety Ob	0	0	0

Reinstatement	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0

Bedding, Padding & Backfill	Month	Target	Project
SLAM	39	48	39
Hazard Report	2	8	2
Safety Ob	1	8	1

HDD & Special Crossings	Month	Target	Project
SLAM	22	24	31
Hazard Report	2	4	2
Safety Ob	4	4	6

Tie Ins	Month	Target	Project
SLAM	46	42	46
Hazard Report	6	6	6
Safety Ob	0	6	0

Lowering-In	Month	Target	Project
SLAM	60	72	60
Hazard Report	16	7	16
Safety Ob	5	7	5

10.0 APPENDIX 3 – PROJECT SAFETY MAP (APRIL 2015)

SPIECAPAG ENTREPOSE LUCAS

EGP Project Safety Map :: April 2015

APA Group

Survey	Month	Target	Project
SLAM	25	36	66
Hazard Report	4	6	5
Safety Ob	9	6	9

Plant & Logistics	Month	Target	Project
SLAM	90	102	301
Hazard Report	10	12	11
Safety Ob	36	12	116

Project PDF Maps developed and issued following HSEQ Improvement Suggestion by driver Paul Nuss

Global Equipment Services' Design Engineer Matt Dridan conducts Vac-Lift training sessions with crews involved with pipe loading and pipe stringing. The training covered topics including maintenance, inspection, safe work procedures, machine safe operating limits and affects of G-forces on vacuum's ability to hold pipe.

EGP Project Total	Month	Project
Injury Free Days	30	189
Injury Free Man Hours	55,153	109,824
Kilometres Driven	220,159	446,015
SLAM	588	1,257
Hazard Report	27	140
Safety Ob	117	394
Actions Opened	161	349
Actions Closed	136	285
NM	5	11
ED	1	1
VEH	1	1
FAI	0	1
LTI / MTI	0	0

Actions - Corrective actions logged in CAR
NM - Near Miss
ED - Equipment Damage
VEH - Vehicle Damage
FAI - First Aid Injury
LTI - Lost Time Injury / **MTI** - Medical Treatment Injury

De-Skid & Plug *includes Access Track statsto March	Month	Target	Project
SLAM	73	24	123
Hazard Report	0	4	0
Safety Ob	5	4	23

RoW	Month	Target	Project
SLAM	46	102	223
Hazard Report	0	12	3
Safety Ob	5	12	84

Stringing	Month	Target	Project
SLAM	92	92	92
Hazard Report	7	8	7
Safety Ob	35	8	35

Bending	Month	Target	Project
SLAM	39	48	43
Hazard Report	0	8	0
Safety Ob	6	8	6

Welding & NDT	Month	Target	Project
SLAM	76	108	76
Hazard Report	1	12	1
Safety Ob	3	12	3

Field Joint Coating	Month	Target	Project
SLAM	46	48	46
Hazard Report	1	8	1
Safety Ob	7	8	13

Pipe over hill @ KP 43

Fortnightly safety BBQ @ Sunrise Dam

Emergency Crew	Month	Target	Project
SLAM	56	24	73
Hazard Report	3	3	5
Safety Ob	5	3	9

Hydrotest	Month	Target	Project
SLAM	4	4	3
Hazard Report	0	1	0
Safety Ob	0	1	0

Reinstatement	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0

Bedding, Padding & Backfill	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0

HDD & Special Crossings	Month	Target	Project
SLAM	9	8	9
Hazard Report	0	1	0
Safety Ob	2	1	2

Lowering-In and Tie-Ins	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0

Trenching *includes Rock Detection	Month	Target	Project
SLAM	16	8	30
Hazard Report	1	2	1
Safety Ob	4	2	12

11.0 APPENDIX 4 – PROJECT SAFETY MAP (MARCH 2015)

EGP Project Safety Map :: March 2015

APA Group

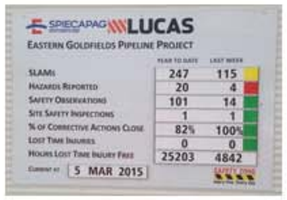
Survey	Month	Target	Project
SLAM	40	32	40
Hazard Report	1	4	1
Safety Ob	0	4	0
Improvements	2		2

Plant & Logistics	Month	Target	Project
SLAM	206	136	210
Hazard Report	1	17	1
Safety Ob	49	17	80
Improvements	16		16

Pioneer Track	Month	Target	Project
SLAM	21	24	21
Hazard Report	1	3	1
Safety Ob	13	3	13
Improvements	2		2

Access Tracks	Month	Target	Project
SLAM	49	64	49
Hazard Report	0	8	0
Safety Ob	18	8	18
Improvements	4		4

Project Manager Olivier Balloy (l) congratulates Logistics Supervisor Graham Meers (r) for achieving Safety Supervisor of the Month. The award is judged on performance of each supervisor individually as well as their team's performance. Criteria includes use of risk management tools, SWMS compliance, prestart meeting effectiveness, PPE compliance, environmental performance and meeting training requirements



Site Safety Stats Board

Logistics crew unloading trailer in yard

EGP Project Total	Month	Project
Injury Free Days	31	159
Injury Free Man Hours	33,550	53,112
Kilometres Driven	172,278	224,767
SLAM	525	660
Hazard Report	8	55
Safety Ob	171	265
Actions Opened	102	188
Actions Closed	67	149
Improvements	61	61
NM	6	6
ED	0	0
VEH	0	0
FAI	1	1
LTI / MTI	0	0

Actions - Corrective actions logged in CAR
Improvements - Suggestions received
NM - Near Miss
ED - Equipment Damage
VEH - Vehicle Damage
FAI - First Aid Injury
LTI - Lost Time Injury / **MTI** - Medical Treatment

RoW	Month	Target	Project
SLAM	172	192	172
Hazard Report	3	24	3
Safety Ob	79	24	79
Improvements	10		10

Stringing	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

Bending	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

Welding & NDT	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

Field Joint Coating	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

Reviewing SWMS and completing First Aid training during wet weather days

Site 4WD Ambulance

Clear & Grade :: Day 1

Emergency Crew	Month	Target	Project
SLAM	23	24	23
Hazard Report	2	3	2
Safety Ob	4	3	4
Improvements	1		1

Hydrotest	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

Reinstatement	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

Bedding, Padding & Backfill	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

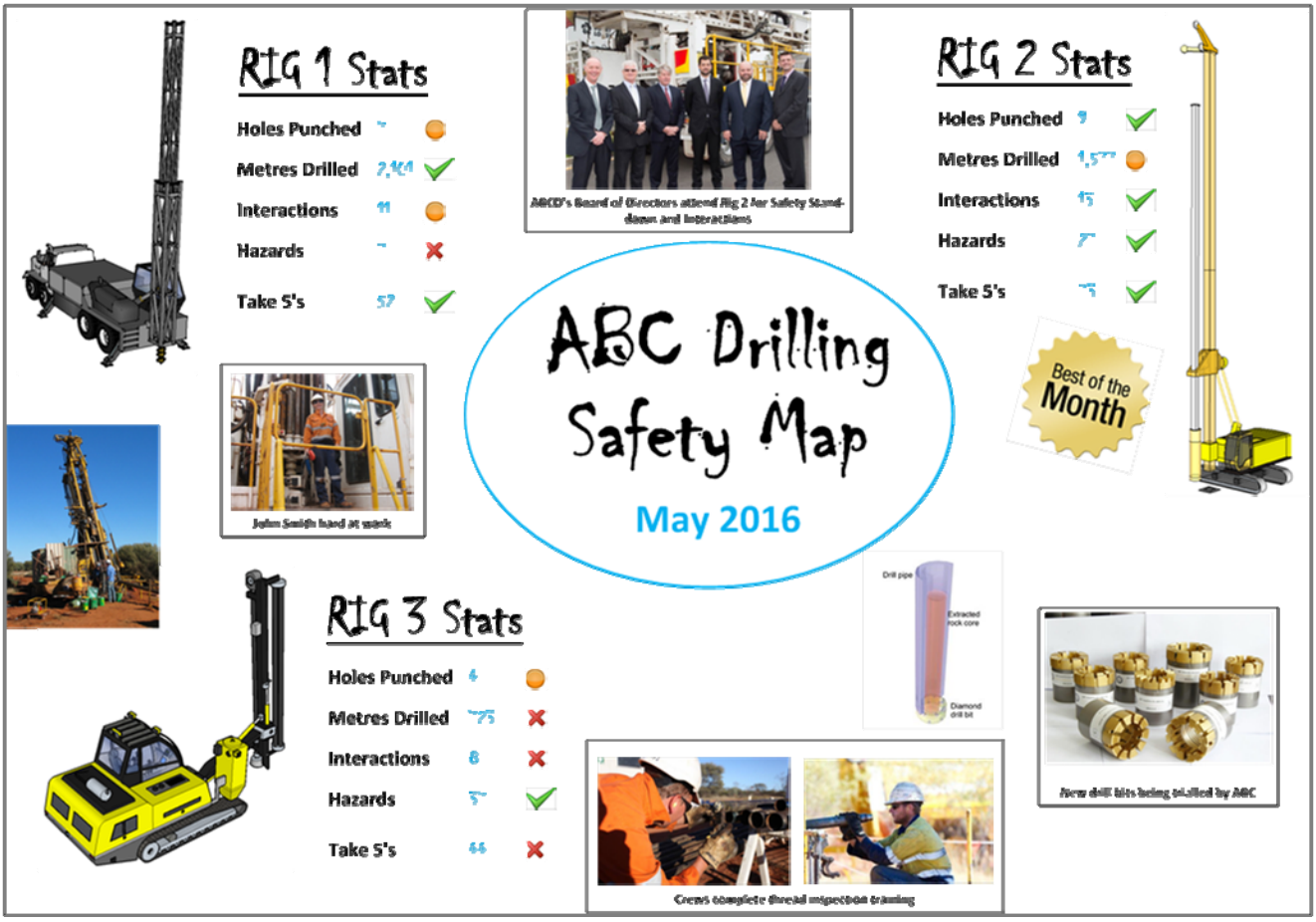
HDD & Special Crossings	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

Lowering-In and Tie-Ins	Month	Target	Project
SLAM			0
Hazard Report			0
Safety Ob			0
Improvements			0

Trenching *Includes Rock Detection for March	Month	Target	Project
SLAM	14	16	14
Hazard Report	0	2	0
Safety Ob	8	2	8
Improvements	0		0

12.0 APPENDIX 5 – SAFETY MAP FOR DRILLING CONTRACTOR

A drilling company, whose work team(s) may work in a fixed location for an extended period, or who work in many locations but on the same project site, could adapt the Project Safety Map in a number of ways.



13.0 APPENDIX 6 – SAFETY MAP FOR MINE SITE

A fixed facility (such as a CPP or FCS construction) or a mine site could use the Project Safety Map to track the performance of each department or activity on site.