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Emergency Management in the Wind Industry
Observations and Current Challenges

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Objectives of today's presentation

- Introduction to Parabellum International
- Identify and discuss the "typical" incidents/injuries in the wind energy sector
- Project specific challenges – food for thought
- How to close the identified gaps

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Introduction

GM of Parabellum International supporting major resource clients via global master services agreements:

- APAC
- US
- Europe/Middle East

Prior to this:

HSE Execution Manager for the $60+b USD Chevron Gorgon Barrow Island LNG project:

- Remote Island – active cyclone area – 5 project demobilisations per season
- 8500 construction workers
- 100 vessels
- Incident commander and direct advisor to the MD for all Australian/New Zealand incidents

9 years British Army Aviation – During non deployed periods we provided aid to local services including Southern sector of the UK North Sea – major events, critically ill patient transfers etc.

18 years offshore marine/resource industry experience – MSc from Strathclyde University in Safety and Risk Management

We are the go-to crisis and emergency services partner for companies with significant exposure to risk, anywhere in the world.

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Specialist advice and consultancy:

- Emergency management system design and training
- Health and safety consultancy including risk assessment and auditing of high-risk areas and major hazard facilities
- Regulatory approval and compliance
- Aviation Authority and airport licensing exercises
- Safety case approvals
- Integrity-critical fire systems inspection and servicing
- Fire equipment design and purchasing and final acceptance testing on behalf of clients

Fire and rescue:

- Industrial and hydrocarbon fire and rescue including hazardous materials support
- Aviation fire and rescue including the management of emergency services to remote and regional airports
- Structural fire and rescue including confined space rescue, rescues from height and offshore marine fire and rescue

Medical services:

- Emergency medical services provision in remote, offshore, and industrial site-based locations

Marine and oil spill:

- Dedicated oil spill response teams and equipment including dedicated vessels
- IMO3 oil spill response command and control – incident commander qualified personnel
- Warehouse facility housing additional oil spill equipment to supplement client and national stocks

Security services:

- Corporate security supporting clients in various sectors including government, education and banking
- Critical infrastructure and site based support for resource companies on major hazard facilities
- Offshore security expertise including regulatory approval and government facilitation

Equipment and vehicles:

- Equipment and vehicle services
- Consultancy and subject matter expertise to clients looking to purchase their own equipment. This includes design input, final acceptance testing, and importation advice and support
- Wet and dry hire of a range of vehicles and equipment held in our existing fleet
- Highly skilled staff to maintain and operate equipment as required

Typical incidents in the wind energy sector

Credit – Energy Institute – UK Offshore wind health and safety statistics 2016 report

- Industry data is difficult to review/source (i.e. onshore project information).
- UK information used as a discussion point – 2016 data – more likely to be a true representation of offshore industry figures.
- Regulator framework and global industry lessons learned sharing would benefit from improvements - some efforts made by Renewable UK - reporting system.
- TRIR is extremely high versus similar high risk global projects – Chevron Gorgon LNG construction with heavy marine element e.g. 100 vessels, marine offload facility and jetty construction and active cyclone area - 0.23 versus 7.11 - Why?

Industry benchmarking metrics

Hours worked

	2016 (2015)	Relative to 2015
Hours worked*	**10 830 000** (9 450 000)	+ 14.6 %

Industry benchmarking metrics

	2016 (2015)	Relative to 2015
Fatalities	**0** (0)	No change
Lost work day incidents	**23** (28)	- 18 %
Restricted work day incidents	**23** (16)	+ 44 %
Medical treatment injuries	**31** (31)	No change
Total	**77** (75)	+ 3 %
Total recordable injury rate	**7.11** (7.94)	- 10 %
Restricted work injury frequency	**2.12** (1.69)	+ 25%
Lost time injury frequency	**2.12** (2.96)	- 28 %

Total recordable injury rate (TRIR)

The number of recordable injuries (fatalities + lost work day incidents + restricted work day incidents + medical treatment injuries) per 1 000 000 hours worked.

High potential incident data

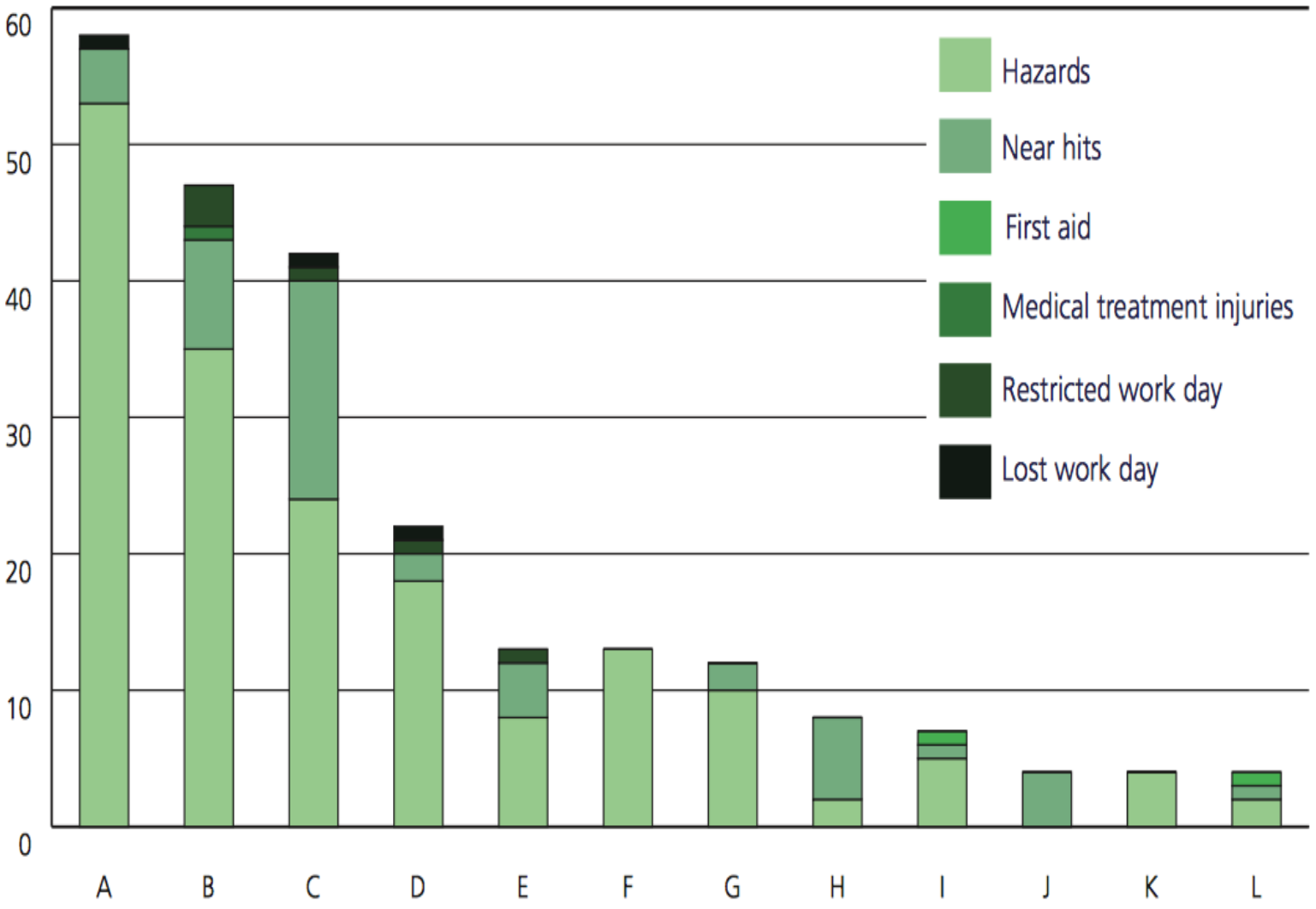

Figure 26: High potential – work process breakdown

Key	
A	Working at height
B	Marine operations*
C	Lifting operations
D	Civil works
E	Working on energized systems
F	O&M buidling maintenance
G	Operating building maintenance
H	Working with hand tools/power tools
I	Working in confined spaces
J	Business travels
K	Other
L	Manual handling

High potential incident data continued

Accidents in the offshore wind industry (Tveiten et al., 2011 and UK Offshore wind health and safety statistics 2016 report)

The most frequent incidents are:

Working at height **-** In 2016, there were ***110*** incidents which occurred while working at height, and whilst the majority of these were classified as hazards, four of the incidents resulted in lost work days. Further analysis shows that ***50 %*** of incidents were classified as high potential. Most incidents took place in the turbine, although notably working at height incidents in substation work and cable areas (onshore and offshore) were all reported as having high potential.

Marine Operations **-** ***109*** incidents took place on crew transfer vessels, ***21*** of which were categorised as high potential.

Lifting operations **-** Lifting operations present a challenge. Of the incidents reported, ***40%*** were classified as high potential. The transition piece area was where the greatest number of incidents took place ***22%***, closely followed by vessels ***17 %.***

What about non work related medical emergencies? **-** Aging workforce who may require evacuation for potential life threatening conditions.

Project specific challenges

Industry information sharing/lessons learned availability - risk to the output quality when undertaking project risk register reviews during design of HSE management system and subsequent emergency management response.

Remote offshore/onshore locations with large distances to additional support - long lead times making it difficult to achieve the 'golden hour" in trauma cases – how reliant is the government framework to support your operations? Closure of UK search and rescue resources transitioning to "private sector" providers is a great example of a changing landscape that requires regular monitoring.

Met ocean conditions and other local factors limiting response options - vessels and aircraft "out of limits" tough remote terrain long distances from state or regional trauma centres, difficult confined space and working at height rescues - what's your Plan B?

Local site management and "head office" ability to assist in incident response - distance/communications challenges/fragmented multiple response agencies to try and coordinate with. How do you staff up for protracted incidents?

Medical emergency response and air-lift evacuation

Lessons learned/project risk register reviews/HSE management system design

Heavy marine elements to ongoing projects – opportunity to reach out to marine bodies and experts to understand the specific risks in crew transfer operations. Other industry sharing opportunities – remote area operations in the mining sector and critical heavy lift expertise as an example.

- Detailed training needs analysis framework linked to “fatal risks” identified.
- Fatal risk reduction programme linked specifically to the top 3 risks with increased management focus and oversight.

Remote offshore/onshore locations with large distances to additional support

Reliable global response agencies available to provide an assessment of local government response capabilities and provide access to additional logistical support. Requires project risk review data e.g. HV electrical work – potential for casualties requiring transport to burns/cardiac specialists – Local hospital ability/expertise may not be the best for your credible scenarios.

- Memorandums of understanding in place with reliable providers – multiple layers required – e.g.RFDS and Aspen
- Dedicated Injury case management support – health/medical experts project managing the case from start to finish

Marine rescue & loss of containment response coverage with specialised equipment

Met ocean conditions and other local factors limiting response options

- Define and document triggers to stop high risk work activities if response options are limited due to local conditions – controlled under the PTW system. Critical lifts/work at height
- Non work related issues – medic qualifications and ability to “stay and play” for extended periods – critical care paramedics with “topside” support and equipment. Doctors versus medics for high risk projects?
- Specialist rescue equipment highlighted at assessment review stage and available on site.
- Documented EM plan with ”best available” medical facility highlighted mapped to project/workforce risks – multiple locations required.

Local site management and “head office” ability to assist in incident response

- Credible well drilled scenarios from your risk review work.
- Internationally recognised Incident management framework in place and multi layer drills undertaken by both site and head office incident management team.
- Roster system for available additional highly trained incident command team members – good mix required, legal, finance, logistical support. First 24 hours can be managed initially – burn out occurs quickly.

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