CHAMBER OF MINES
of South Africa

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Ledging Leading Practice Rollout workshop
Randfontein Golf club
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LEDGING
LEADING PRACTICE VALUE CASE

PUTTING SOUTH AFRICA FIRST

Background

- A number of fatalities in ledging areas indicated that the safety risk in ledging operations had increased
- The CEO Zero Harm Task Team requested the MOSH FOG Team to include “ledging” in their scope when identifying possible leading practices for adoption by the industry

Process

- MOSH FOG Industry Adoption Team involvement
- Data gathering from seven “conventional stoping” mines which engage in ledging activities
- Interviews with the seven mines
- Data analysis
- Outcomes
- Day of learning
- Recommended leading practice

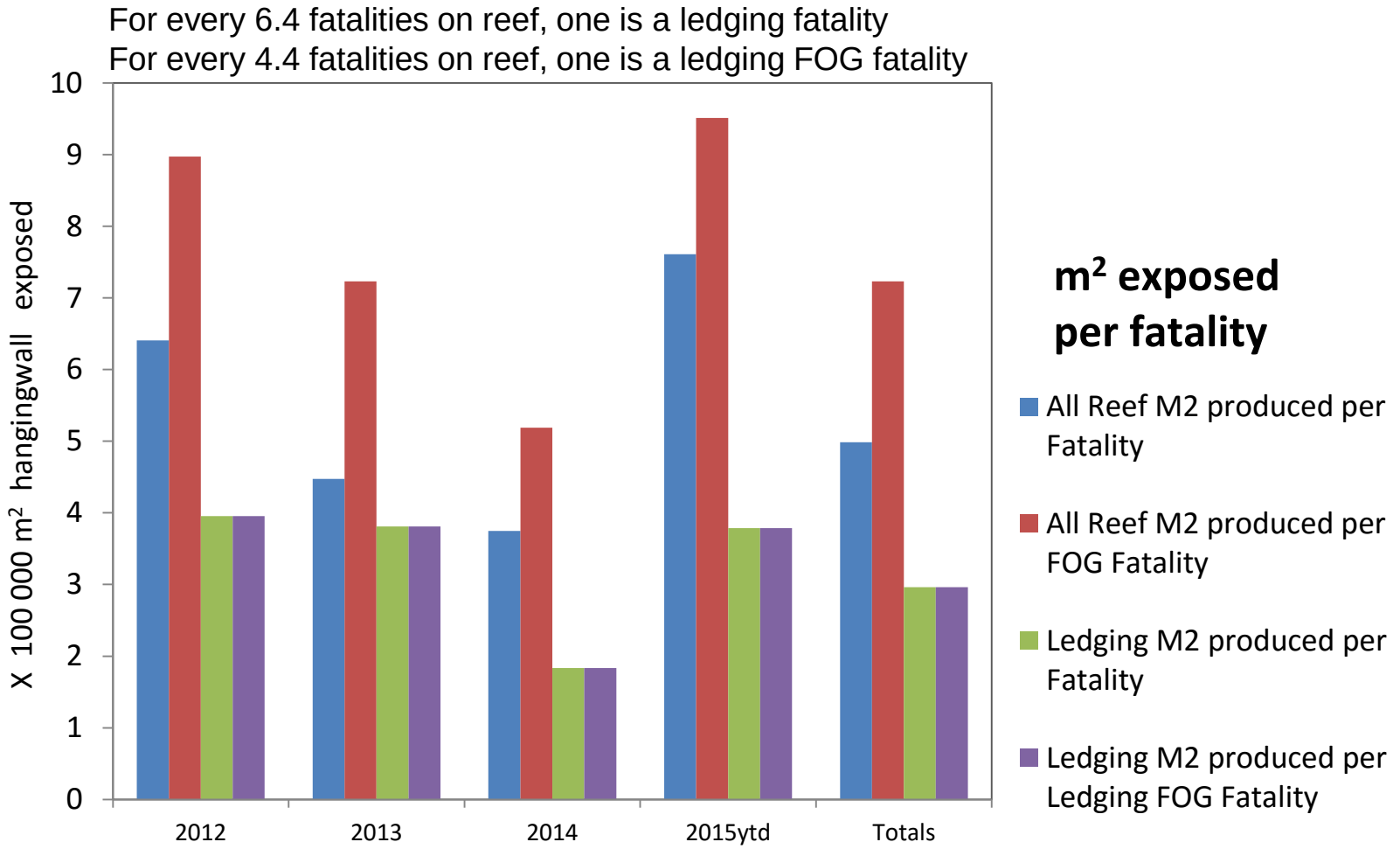
Topics covered with participating mines

- Is ledging a high risk operation (statistics compared to stoping)?
- Are there differing causational factors when comparing ledging incidents to stoping ones?
- What does your ledging standard cover?
- What would you recommend we do to lower risks associated with ledging?

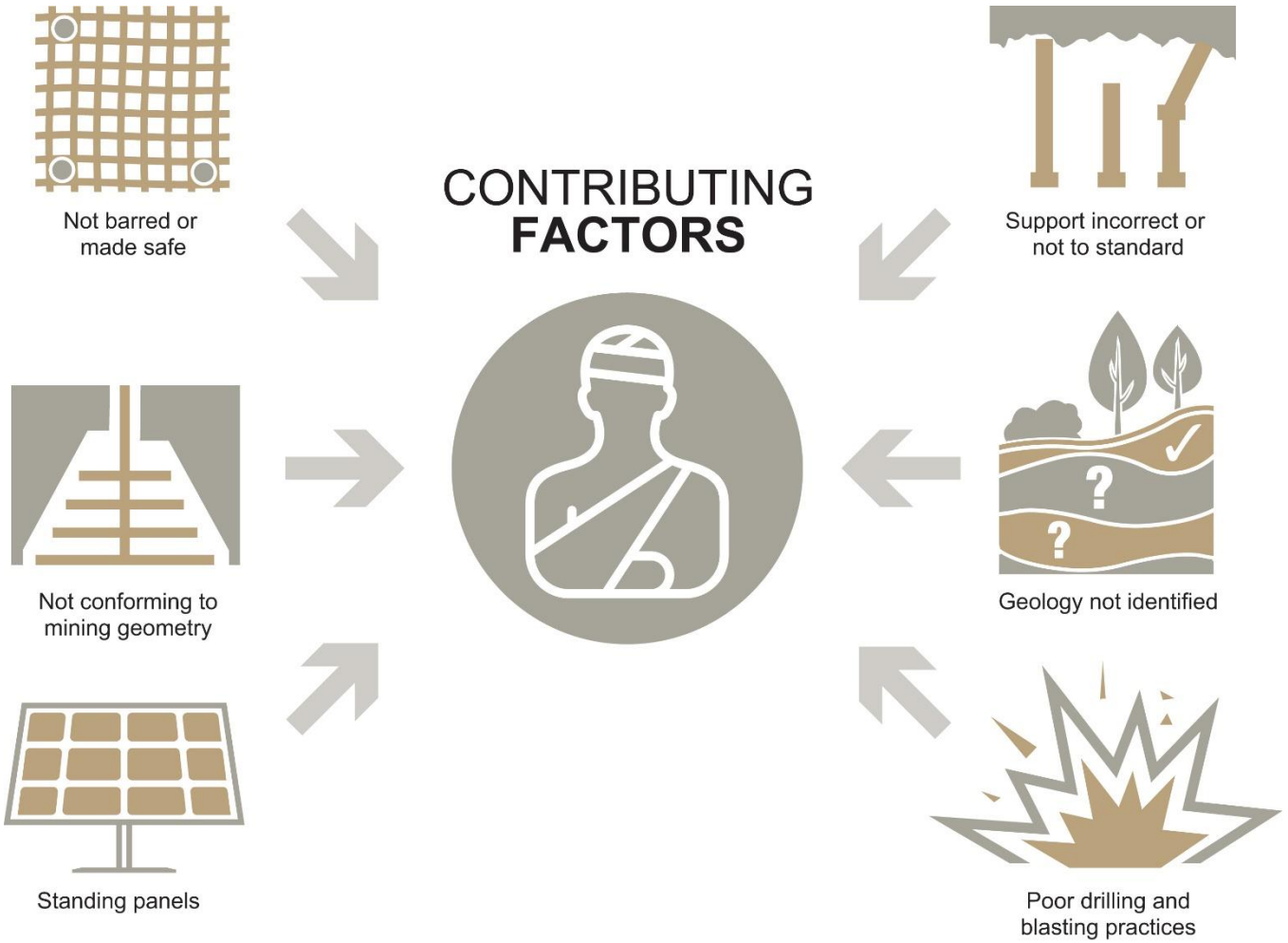
Ledging risks at the seven mines

2012 to 2015 (end Feb)	
Reef horizon fatalities	58
Reef horizon FOG fatalities	40
Ledging fatalities	9
Ledging FOG fatalities (23%)	9
Reef horizon serious injuries*	741
Reef horizon serious FOG injuries*	430
Ledging serious injuries*	39
Ledging serious FOG injuries* (3.5%)	15

Ledging risks



Contributing factors



Contributing factors at mine A

Factors	%
Deviations from standards and rules	85
Not barred or made safe	46
Incorrect support or not to standard	38
Non-conformance to mining geometry	23
Standing panels	23
Geology not identifies	15
Poor drilling and blasting practices	15

Contributing factors at mine B

Factors	%
Deviations from standards and rules	85
Not barred or made safe	46
Incorrect support or not to standard	38
Non-conformance to mining geometry	23
Standing panels	23
Geology not identifies	15
Poor drilling and blasting practices	15

Causes

- The causes of ledging accidents did not differ to those of stoping accidents, and some factors relate:
  - poor development of raises (especially damage to hanging wall)
  - disorganisation of services during ledging
  - dynamic changing environment – stoping has a rhythm
  - ledging is a specialised operation requiring specialist operators
  - resting faces increase the FOG risk, especially at depth
  - differing bonus payments have repercussions

Influences unique to ledging

- Lack of proper cleaning facilities often lead to “maak a plan” activity resulting in support removal or damage, etc.
- Accumulations of Stof causes difficulties for the installation of support
- Installation and re-installation of especially pack support for gullies
- Non-adherence to “ledging limits” and mining blue-print requirements
- Lack of preparation for ledging operations, development, time coordination, ore transport, ventilation, services, etc.
- Lack of adherence to standards

Some indications

- Statistics indicate a higher risk of fatality per ledging m^2
- Statistics indicate that over the period in question, all ledging fatalities were falls of ground-related
- At least two mining companies had no ledging fatalities during the period (2012-2015)

Conclusions

- Ledging should be a safe process – when the steps are correctly followed
- Some pockets of excellence do exist
- Clear responsibilities and accountabilities are required before and during ledging
- Good integrated planning processes key
- There are companies who ledge safely
- The quality of the ledge dictates the efficiency of the stope

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For more information contact the Chamber of Mines

LEARNING HUB

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