

# **Preventing Dropped Objects – The KFELS Way**

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# SCOPE



- 1. Introduction to Keppel FELS Limited**
- 2. National DROPS Statistics**
- 3. KFELS DROPS Statistics**
- 4. Common DROPS Incidents**
- 5. Good Practices**
- 6. Innovation Efforts**
- 7. Promoting Awareness**

# Keppel FELS Limited

- q Global leader in design and construction of mobile offshore rigs
- q Specialises in repairs, conversions and upgrading of:
  - Mobile Offshore Drilling Units
  - Floating Production Units
  - Accommodation Jackups and Semis
  - Tender-Support Rigs , among others



Maersk Discoverer DSS™ 21



PV Drilling II and III - KFELS B Class



Floatel Superior

# Keppel FELS Limited



- q 83 Jackups
- q 26 Semisubmersibles
- q 8 Drilling Tenders

## Other Projects

- Ø Drillships
- Ø Tension Leg Platforms
- Ø FPSOs
- Ø Submersible Drill-Barges
- Ø Topside Decks
- Ø Cable Laying Ships
- Ø Power Plants



KFELS Super B Class



Gold Star DSS™38



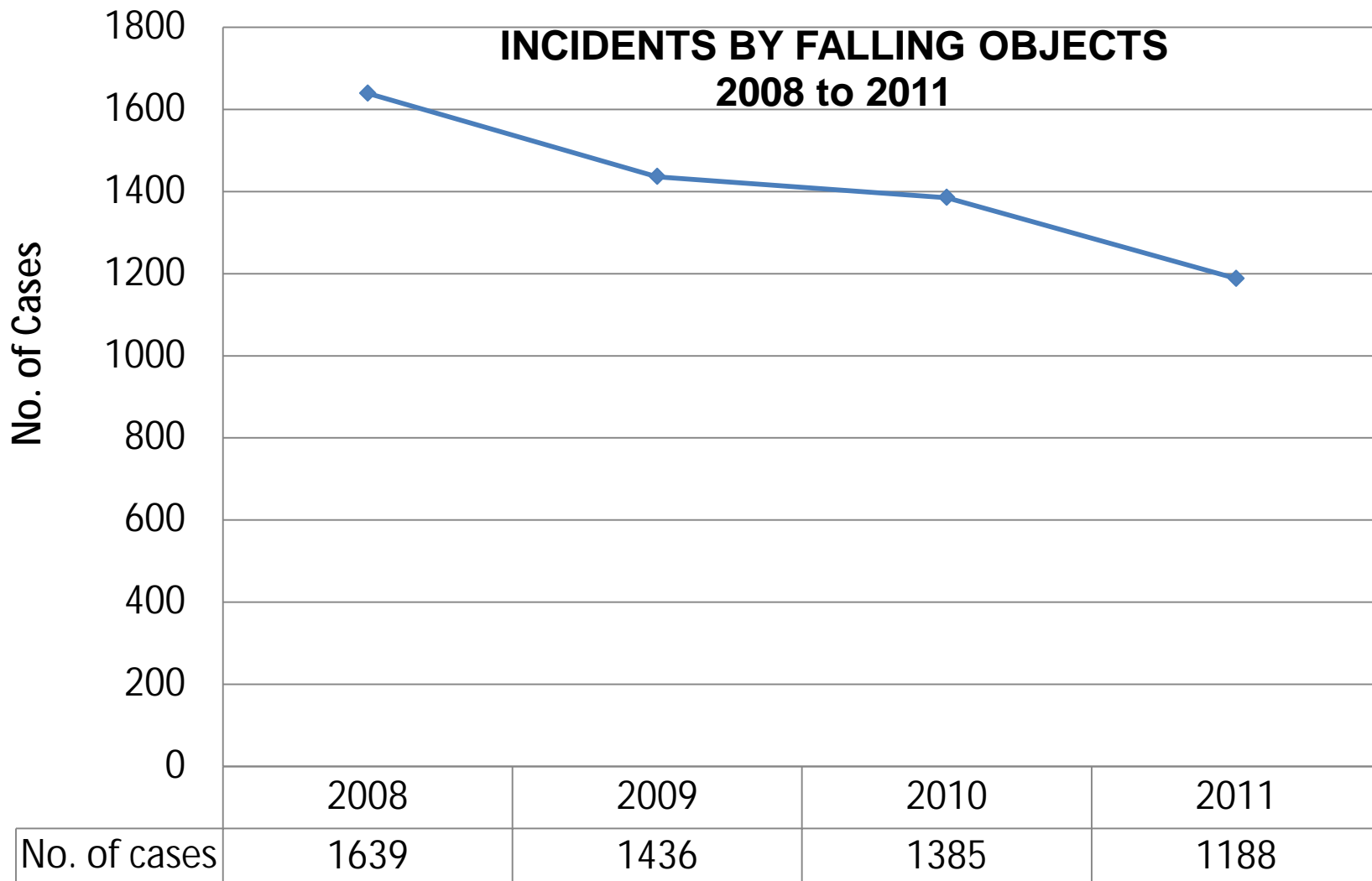
Matterhorn Seastar TLP  
(Atlantia)



Saga Varg  
(Saga Petroleum)



# National Statistics



\*Statistics taken from the Singapore WSH Council

# KFELS Statistics



**INCIDENTS BY FALLING OBJECTS**  
**January to June 2010 to 2012**



No. of cases

2009

14

2010

27

2011

22

2012

9

# Common DROPS Incidents

## Causes

1. Faulty Tools
2. Poor Handling
3. Lack of Securing
4. Improper Storage
5. Drop through Openings



# Faulty Tools





# Poor Handling



**Carrying steel cladding  
and lost his balance  
while descending down  
an inclined ladder**



**Carrying bundle of loose  
materials/tools when  
using elevator**



# Lack of Securing



Without Lanyard





# Improper Storage



# Drop Through Openings





# Good Practices



## Mitigation

1. Scaffold with Toe Boards
2. Edge Protection
3. Overhead Protection on Covered Walkway
4. Securing Hand Tools
5. Inspection of Hand Tools
6. Proper Storage of Items
7. Designated Non-Storage Areas
8. Good Housekeeping



# Scaffold with Toe Boards





# Edge Protection

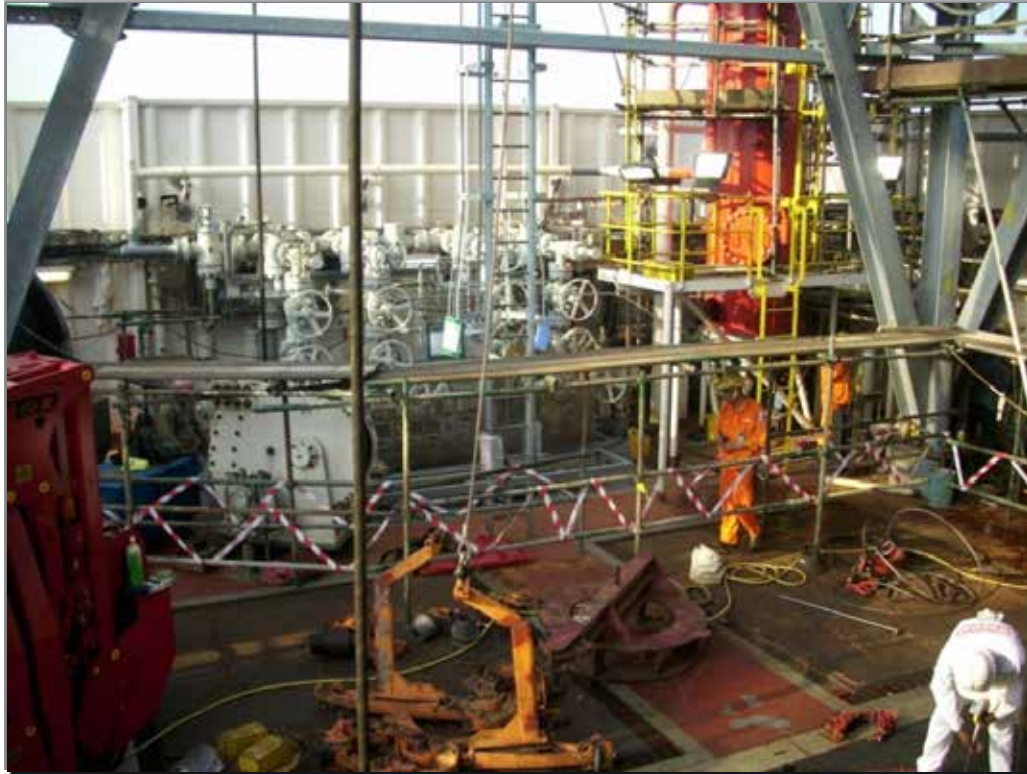
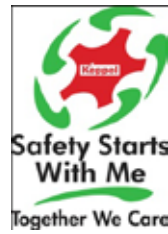


# Edge Protection





# Overhead Protection Covered Walkway



# Securing Hand Tools





# Securing Hand Tools



# Inspection of Hand Tools





# Proper Storage of Items



# Proper Storage of Items





# Designated Non-Storage Area



# Good Housekeeping





# Innovation Efforts

## Magnetic Bags



# Innovation Efforts

## Customized Design - Single Gas Cylinder Rack





# Innovation Efforts

Customized Design – Multi Gas Cylinder Rack





# Promoting Awareness

**Keppel Group**

## HIGH IMPACT RISK ACTIVITIES (HIRA)

### LIFTING SAFETY



#### Lifting Operations

1. Do not swing load over people
2. Do not work under suspended load

### FIRE SAFETY



#### Hot Work Operations

1. Eliminate fire and explosion hazards
2. Provide fire watchman

### PERMIT-TO-WORK



#### Incompatible Work

1. Apply permit-to-work
2. Conduct Risk Assessment for the job

### CONFINED SPACE SAFETY



#### Working in Confined Space

1. Use of Portable Gas Detector
2. Ensure adequate lighting & ventilation

### HEIGHT SAFETY



#### Working at Height

1. Use of fall arrestor/ travel restraint
2. Use only approved scaffolding

### ELECTRICAL SAFETY



#### Working with Electrical System

1. Isolation from energy source
2. Implement Lock Out Tag Out

**Compliance to HIRA is mandatory and applicable to all Keppel operations**

# Promoting Awareness

## SAFETY ALERT

### Falling Objects

#### What Happened?

On 4<sup>th</sup> May 2011 at about 1820hrs, a fire watchman on a pontoon deck was strike on his head with his safety helmet by a sheet of rolled stainless steel cladding (2 feet in length) while he was watching over hot works being carried out. This single sheet of rolled stainless steel cladding was investigated to have fallen from a height of approximately 70feet due to mishandling by a worker while he was carrying it on his way down an incline ladder to the main deck. The impact of the falling cladding caused the safety helmet to break into half and injuring the fire watchman.

#### Findings

- The worker was walking down the inclined ladder, his left hand was holding on the hand railing while his right hand was holding on the sheet of stainless steel cladding.
- While walking down, worker slip on the wet step of the incline ladder.
- Worker reacted instantaneously gripping hard on the hand railing while his right hand loss control of the rolled stainless steel cladding sheet.
- The rolled stainless steel cladding sheet slipped out of the intermediate railing and fell down to the pontoon deck.

#### Lesson Learnt

- Incidents involving falling objects are avoidable.
- Risk assessment must be conducted prior to the commencement of work to identify and mitigate all potential risks with respect to local condition.
- To be more attentive and exercise vigilance in wet working environment.
- Practice of trailing for better grip on hand railing while on an incline ladder (Picture, Page 2)
- To educate the workers on proper handling of materials. I.e. Loose items should keep in a carrier bag for transportation purpose. (Picture, Page 3).
- Safety helmet should be checked thoroughly as recommended below.

#### Maintenance and Care of Safety Helmet

- Safety helmet must be inspected weekly.
- Helmet observed with sign of dents, cracks, deep scratches as well as penetration must discarded and not to be in use.
- Fading of the shell color, loss of gloss surface or weathering of the surface of the helmet must be discarded as it indicates a loss of strength of the helmet due to ultraviolet degradation.
- Safety helmet is prohibited from paint and rendered ineffective if tainted by chemical products.
- As recommended in SS 98, safety helmet which have been in service for more than 3 years should have sample tested by accredited laboratory to ensure its effectiveness.
- Plastics components of the harness (Inner lining of the helmet) should be inspected with no damages and replaced not longer than 2 years in service.

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# DROPS Forum Singapore

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# Thank You