

# Petroleum Development Oman LLC

## Q2 2013 LTI Incident Analysis

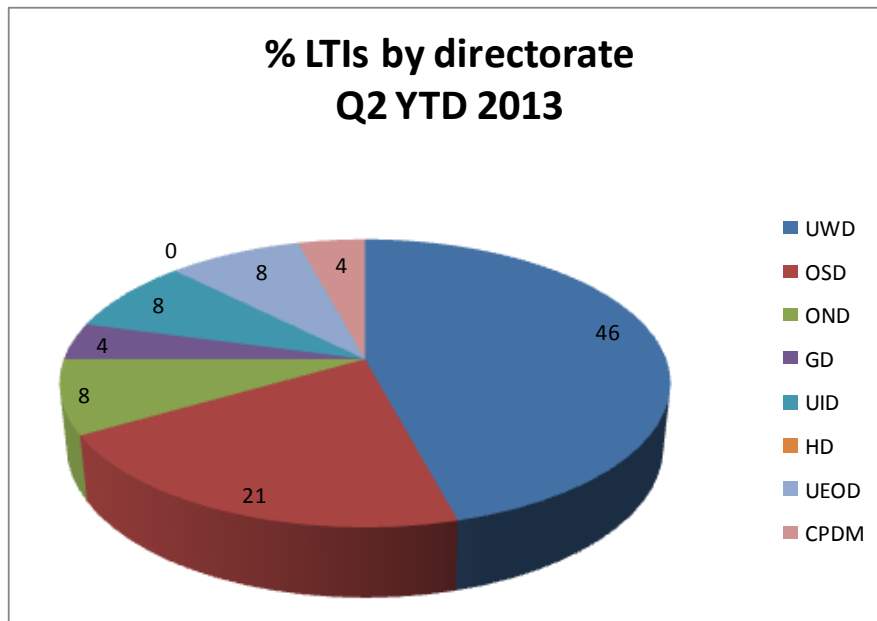
### Summary

PDO's LTIF performance for Q2 2013 YTD was 0.30 which was 37% higher than the 0.22 rate achieved in the same time period in 2012. PDO suffered thirteen LTIs in the quarter, doubling the number in 2012 which brought the YTD total to twenty four LTIs. The following analysis of the incidents is designed to identify trends and points of statistical interest to target future resource.

### Analysis

#### 1. PDO LTI performance by directorate

Directorate	Q2		% of 2012	YTD		% of 2012
	2013	2012		2013	2012	
UWD	6	5	20	11	12	-8
OSD	1	2	-50	5	4	25
GD	1	0	100	1	1	0
OND	0	0	0	2	0	100
UID	2	0	100	2	0	100
UEOD	2	0	100	2	0	100
XD	0		0	0		0
CPDM	1		-	1		-
<b>Total</b>	<b>13</b>	<b>7</b>	<b>186</b>	<b>24</b>	<b>17</b>	<b>142</b>



## **2. Number of LTIs per Operational Team - YTD**

1. UWD 11 – (4 - UWN, 3 – UWS, 2 –UWX, 1- UWI)
2. OSD 5 – (4 – OSE, 1- OSET)
3. OND 2 – (1- ONET, 1 – ONO)
4. UID 2 – (1- UIPT, 1- UIR)
5. UEOD 2 – (2-UEO)
6. GD 1 – (1- GGE)
7. CPDM 1 – (1- OSHE)

## **3. PDO v Contractor**

1. 23 - PDO contractors
2. 1 - PDO employee

## **4. Contractor information**

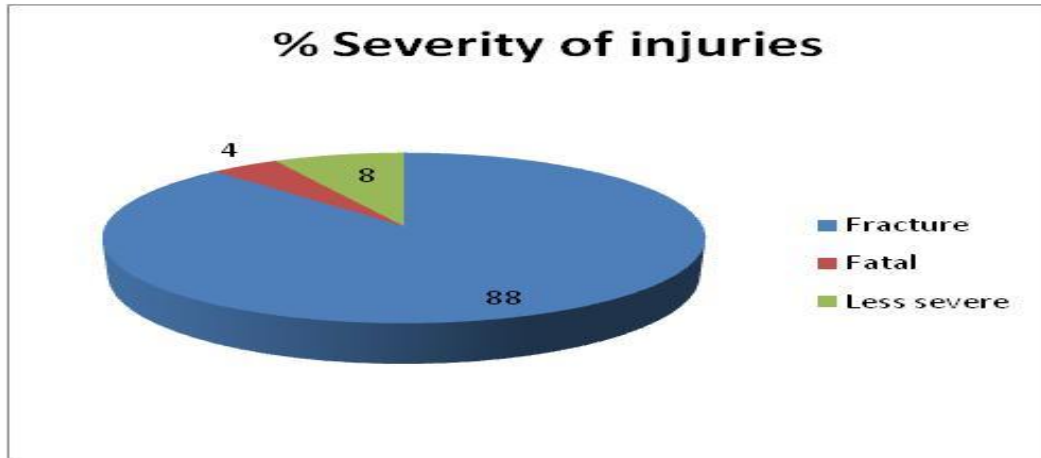
There were 15 contractors involved, five more than once.

1. 3 LTI incidents – Dalma
2. 2 LTI incidents - Al Turki, Galfar, KCAD, Weatherford
3. 1 LTI incident – MBPS, Shivani, Arabian Drilling Services, Petrogas, STST, Attila Dogan, Haimo Technologies, Tawoos, IPC, WIPRO,

## **5. Incident description – injury**

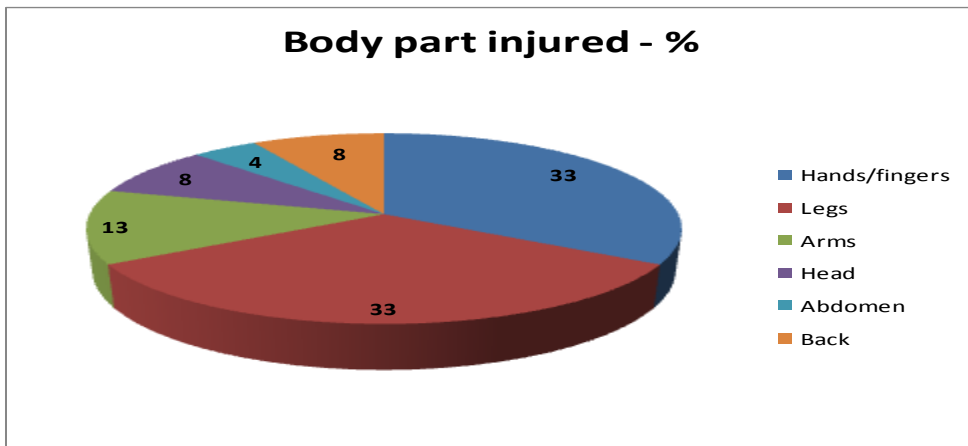
1. Scald injury when light fitting filled with hot water from leaking pipe
2. Fractured finger tightening shackle and caught it between two bowls
3. Fractured arm, when he falling two meters from the mixing hopper
4. Rollover RTA causing fatality (IP1), fractured foot (IP2), abdominal trauma (IP3) and chest pains (IP4)
5. Fractured finger, placed it in pinch point on roughneck assembly he was reconnecting
6. Fractured arm when he fell down the utility hole on the rig floor
7. Fractured foot when hit by foundation slipper JCB was swinging into place
8. Fractured finger when caught in pulley wheel on portable lighting rig
9. Fractured elbow when he stumbled backwards over flowline.
10. Fractured finger when hit by a lubricator which was being lifted from the BOP
11. Fractured leg when he fell from access stairs of a FBU unit after feeling faint.
12. Fracture of his spine after falling 2.5 metres from wooden scaffolding
13. Fractured finger when stack of steel brackets he was restacking collapsed
14. Fractured finger when caught in the tongs on the rig
15. Fractured thumb when caught between excavator arm and bracket he was trying to change.
16. Fractured leg when he fell from platform outside the workshop at the hoist
17. Fractured toe when drill pipe was lowered on to his foot

- 18. Fractured leg when pallet box filled with reinforced glass tipped onto him when trying to lever it open.
- 19. Fractured finger when hit by a hammer
- 20. Broken leg when he fell off a ladder
- 21. Fractured leg when he fell through loose grating on platform



**6. Parts of body injured**

- a. Hands/fingers - 8
- b. Leg/foot - 8
- c. Arms - 3
- d. Head - 2
- e. Back - 2
- f. Abdomen - 1



## 7. Incident classification

- a. Crushed by - 10
- b. Road traffic incident - 4
- c. Fall from height - 4
- d. Slip, trip and fall - 3
- e. Struck by - 2
- f. Chemical/burn - 1

**Table: Comparison 2013 vs 2012**

Type of incident causing LTI	N° of LTIs 2013	N° of LTIs 2012	% change from 2012
Road traffic	4	2	200
Slip, trip, fall	3	2	150
Crushed or trapped	10	7	143
Struck by object	2	3	67
Fall from height	4	3	133
Chemical/heat burns	1	0	100
<b>TOTAL</b>	<b>24</b>	<b>17</b>	<b>141</b>

## 8. Actual Severity

- a. Severity 2 (minor injury) - 1
- b. Severity 3 (major injury) - 22
- c. Severity 4 (single fatality) - 1

## 9. Potential Severity

- a. **9** – C3 – major injury – has happened in the company
- b. **5** – D3 – major injury – happened more than once a year in company
- c. **1** – B5 – multiple fatal injury – heard of in the industry
- d. **3** – B3 – major injury – heard of in the industry
- e. **2** – C4 – fatal injury – has happened in the company
- f. **1** – D2 – minor injury – happened more than once a year in company

**10. Underlying causes – numbers of**

- a. 6 separate causes - 4
- b. 5 separate causes - 2
- c. 4 separate causes - 8
- d. 3 separate causes - 3
- e. 2 separate causes - 5

**11. Types of underlying causes**

- a. Training - 17
- b. Incompatible goals - 13
- c. Procedures - 14
- d. Organisation - 12
- e. Communication - 11
- f. Hardware - 6
- g. Design - 6
- h. Error enforcing conditions - 4
- i. Maintenance management - 2
- j. Housekeeping - 1

**12. Time of incidents**

- a. 00:00 - 04:00 - 0
- b. 04:00 – 08:00 - 1
- c. 08:00 – 12:00 - 11
- d. 12:00 – 16:00 - 0
- e. 16:00 – 20:00 - 10
- f. 20:00 - 00:00 - 2

**13. Age of IP**

- a. 20 - 24 - 8
- b. 25 - 29 - 9
- c. 30 - 34 - 4
- d. 35 - 39 - 1
- e. 40 - 44 - 0
- f. 45 - 49 - 2
- g. 50 - 54 - 0
- h. 55 - 59 - 0
- i. 60 - 64 - 0

## Conclusion/Observations

### 1. Conclusion

Well Engineering is the only directorate that has a reduced LTI rate from 2012. Interestingly the spread of LTI incidents is wider now involving nearly all directorates with the exception of XD.

The LTI severity trend continues to involve an abnormally high instance of major injuries: fractures – 84%; death 4% and less severe – 12% each.

Competency of people is the top causal factor followed equally by a lack of procedures and people's inappropriate behavior. Poor organization and communication then come next.

The most common time of incidents has shifted from between 12:00 and 16:00 to between 08:00 and 12:00 and 16:00 and 20:00 (an even split between the two).

The most common age of person injured is between 25 and 29 years old.

### 2. Observations

- a. Progress on the behavioral safety project is essential as this impact on the incompatible goals and communication.
- b. Investigation findings should include the experience of the employee in their current role many are not recorded.
- c. PDO should focus on employees' awareness in 'perceived low risk' environments.
- d. PDO should focus on improving the reporting of near misses, hazardous conditions/ actions and minor incidents.
- e. Introduce 'visual impact training' for the incidents – (record actors re-enacting incidents to show the incidents and consequences of injuries before they happen).

## Glossary

a. **Incompatible goals**

Failure to manage conflict between different goals, such as safety v production, formal v informal rules, company directives v personal goals

b. **Communication**

Failure to effectively transmit information

c. **Error enforcing conditions**

Factors such as time pressure, changes in work patterns, physical working conditions (hot, cold, noisy) etc that promote human error

d. **Procedure**

Unclear, unavailable, incorrect or otherwise ineffective work instructions

e. **Training**

Deficiencies in the system for providing the necessary knowledge or skills

f. **Design**

Deficiencies in the layout or design of facilities, plant or equipment

g. **Maintenance management**

Failures in the system for ensuring the technical integrity of facilities, plant, equipment and tools

h. **Hardware**

Failures due to inadequate quality or non availability of materials or equipment

i. **Organisation**

Deficiencies in either the structure of a company or the way tasks, responsibilities and authorities are assigned

Severity	CONSEQUENCES				INCREASING LIKELIHOOD				
	People	Assets	Environment	Reputation	A Never heard of in the Industry	B Heard of in the Industry	C Has happened in the Company or more than once per year in the Industry	D Has happened at the location or more than once per year in the Company	E Has happened more than once per year at the location
0	No injury or health effect	No damage	No effect	No impact					
1	Slight injury or health effect	Slight damage	Slight effect	Slight impact					
2	Minor injury or health effect	Minor damage	Minor effect	Minor impact					
3	Major injury or health effect	Moderate damage	Moderate effect	Moderate impact					
4	PTD* or up to 3 fatalities	Major damage	Major effect	Major impact					
5	More than 3 fatalities	Massive damage	Massive effect	Massive impact					

PTD\* = Permanent Disability

**RAM matrix**

**End of analysis**