

Petroleum Development Oman LLC

Q3 2013 LTI Incident Analysis

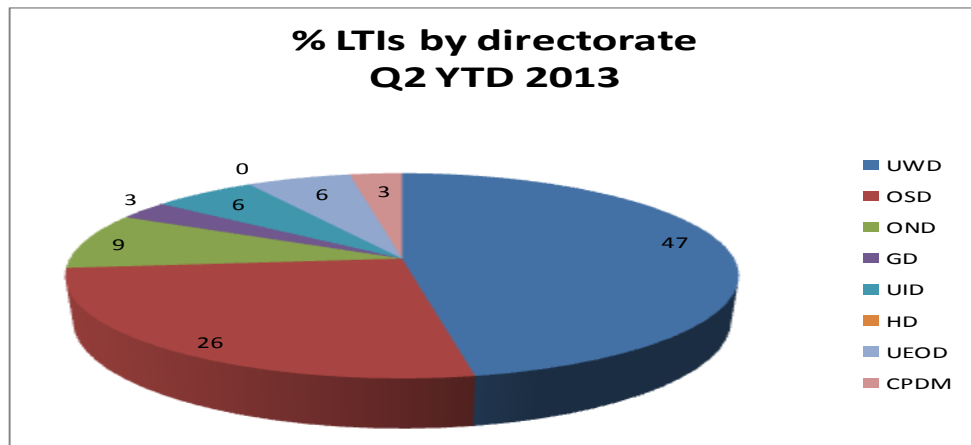
Summary

PDO's Lost time incident frequency (LTIF) performance up to Q3 2013 was 0.26, an encouraging 13% lower than the rate achieved by Q3 in 2012 (0.3). PDO suffered ten LTIs in the quarter, six less than in 2012 which brought the total to thirty four LTIs which is still one more than in 2012. 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	Q3		% of 2012	YTD		% of 2012
	2013	2012		2013	2012	
UWD	5	7	(29)	16	19	(16)
OSD	4	3	33	9	7	29
GD	0	1	0	1	2	(50)
OND	1	5	(80)	3	5	(40)
UID				2	0	100
UEOD				2	0	100
XD						
CPDM				1		-
Total	10	16	(38)	34	33	3



2. Number of LTIs per Operational Team - YTD

1. UWD – 16 – (4 - UWN, 3 – UWS, 5 –UWX, 1- UWI, 2- UWC, 1- OSPTW)
2. OSD – 9 – (6 – OSE, 2- OSET, 1- OSHOH)
3. OND – 3 – (2- 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. 32 - PDO contractors,
2. 2 - PDO employee

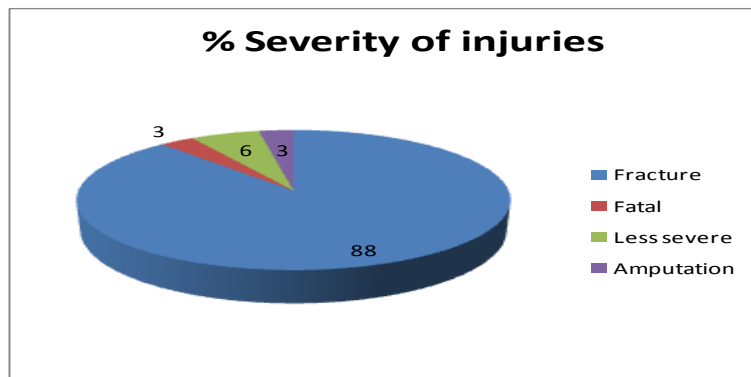
4. Contractor information

1. There are 18 contractors who have suffered LTI incidents, seven of these contractors experienced more than one LTI incident.
 - i. 3 incidents – Dalma, Al Turki, KCAD, Galfar
 - ii. 2 incidents – Weatherford, Abraj, Petrogas; PDO
 - iii. 1 incident – MBPS, Shivani, Arabian Drilling Services, STST, Attila Dogan, Haimo Technologies, Tawoos, IPC, WIPRO, Haliburton, Sea and Land

5. Incident description – injury and action

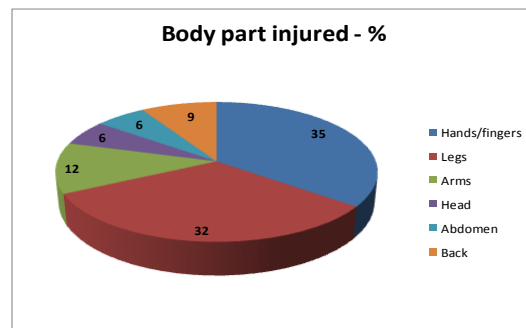
1. Scald injury when light fitting filled with hot water from leaking pipe
2. Fractured finger tightening shackle and caught it between two bowls
3. Fractured arm, falling two meters from the mixing hopper
4. Rollover causing fatality (IP1), fractured foot (IP2), abdominal trauma (IP3) and chest pains (IP4)
5. Fractured finger, placing 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 stumbled backwards over flow-line.
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 collapsed he was restacking
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 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 fell off a ladder
21. Fractured leg when fell through loose grating on platform
22. Amputated finger on a rotary saw
23. Fractured leg falling off a ladder
24. Fractured toe getting out of lorry
25. Fractured finger hammering a safety clamp
26. Multiple fractures when he fell 9m from rig
27. Fractured pelvis when crushed by pipe
28. Fractured wrist when stairway fell down
29. Fractured arm when the tong unlatched and struck him
30. Fractured foot when a beam pump guard fell on him
31. Fractured finger when it was caught in a rotary wheel



6. Parts of body injured

- a. Hands/fingers - 12
- b. Leg/foot - 11
- c. Arms - 4
- d. Head - 2
- e. Back - 3
- f. Abdomen - 2



7. Incident classification

Type of incident causing LTI	N ^o of LTIs 2013	N ^o of LTIs 2012	% change from 2012
Road traffic	4	4	0
Slip, trip, fall	4	3	33
Crushed or trapped	13	14	-7
Struck by object	4	6	-33
Fall from height	7	5	40
Chemical/heat burns	1	1	0
Rotating equipment	1	0	100
Flash fire	0	0	0
TOTAL	34	33	103

8. Actual Severity

- a. Severity 2 (minor injury) = 2
- b. Severity 3 (major injury) = 31
- c. Severity 4 (single fatality) = 1

9. Potential Severity

- a. **12** – C3 – major injury – has happened in the company
- b. **10** – D3 – major injury – happened more than once a year in company
- c. **4** – B5 – multiple fatal injury – heard of in the industry
- d. **3** – B3 - major injury – heard of in the industry
- e. **4** – C4 – fatal injury – has happened in the company
- f. **1** – D2 – minor injury – happened more than once a year in company

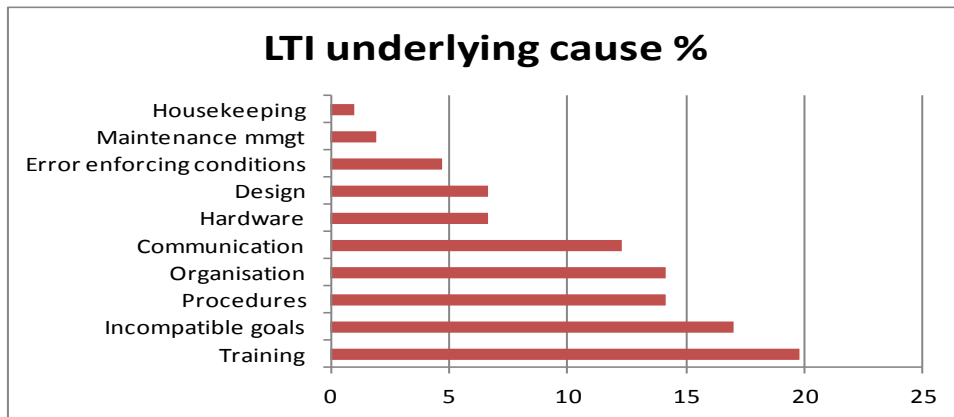
10. Underlying causes – numbers of

- a. **6** separate causes- 4
- b. **5** separate causes – 3
- c. **4** separate causes – 10
- d. **3** separate causes - 5
- e. **2** separate causes – 5
- f. **1** separate cause – 1

11. Types of underlying causes

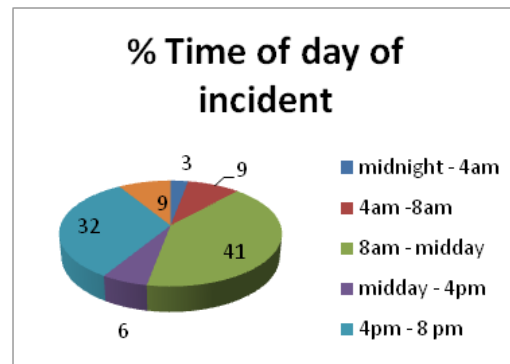
a. Training	21
b. Incompatible goals	18
c. Procedures	17
d. Organisation	15
e. Communication	13
f. Hardware	7
g. Design	7
h. Error enforcing conditions	5
i. Maintenance management	2
j. Housekeeping	1

Underlying Cause	% causation	Description of Underlying Cause - Tripod Beta - (Casual review)
Training	20	Deficiencies in systems providing knowledge and skills
Incompatible goals	17	Failure to manage conflict: between formal rules & informal rules of a work group or between demand of a task and personal preoccupations or distractions.
Procedures	14	Unavailable, incorrect, outdated or otherwise unusable
Organisation	14	Deficiencies in company structure or way tasks/responsibilities are assigned
Communication	12	Failure in effectively transmitting information
Hardware	7	Failures in the system for ensuring technical integrity of facilities, plant, equip, tools
Design	7	Inadequate quality or non availability of materials or equipment
Error enforcing conditions	5	Time pressure, macho behavior, physical working conditions (hot, noisy etc) promoting errors or violations
Maintenance mmgt	2	Failures in the system for ensuring technical integrity of facilities, plant, equip, tools
Housekeeping	1	Failure in housekeeping standards



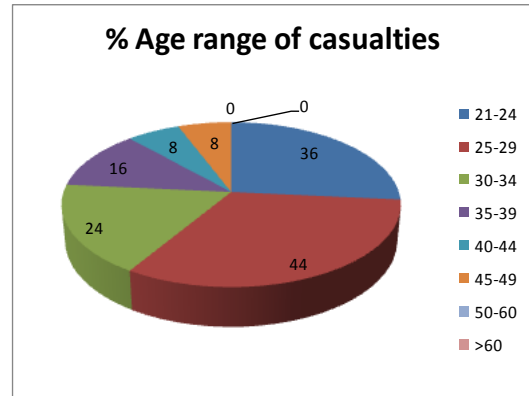
12. Time of incidents

a. 00:00-04:00	-	1
b. 04:00 – 08:00	-	3
c. 08:00 – 12:00	-	14
d. 12:00 – 16:00	-	2
e. 16:00 – 20:00	-	11
f. 20:00 - 00:00	-	3



13. Age of IP

a.	20-24	- 9
b.	25- 29	- 11
c.	30 – 34	- 6
d.	35 – 39	- 4
e.	40 – 44	- 2
f.	45 - 49	- 2
g.	50 – 54	- 0
h.	55- 59	- 0
i.	60 – 64	- 0
j.	not recorded	- 0



A. Observations

All directorates with the exception of the South Directorate had a good month, with either no LTIs or having less than they did last year. XD remains the only LTI free directorate for the year.

The LTI severity trend continues to involve an abnormally high instance of major injuries with only 6% involving an injury less severe than a fracture. This suggests a significant under-reporting of less severe lost time injuries.

The competency of people remains the top causal factor followed by people's inappropriate behavior. Poor procedures, organization and communication then come next.

The most common time of incidents is still between 08:00 and 12:00 (41%) with the later time between 16:00 and 20:00 coming second (32%).

The most common age of person injured is between 25 and 29 years old (44%) with people younger coming second (36%).

B. 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