

Petroleum Development Oman LLC

Q4 2016 LTI Incidents Analysis Study

MSE3

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1. Summary

The PDO's Lost Time Injury Frequency (LTIF) performance for the end of quarter four (Q4) of 2016 was 0.22, which was a significant improvement compared to LTIF of 0.28 at the end of Q4 in 2015. The company suffered 8 LTIs in the fourth quarter in 2016, 5 less than in Q4 2015 despite the increased number of man-hours worked in 2016. This document provides analysis of incidents in 2016 showing trends and points of statistical interest to target future resources.

2. Key Observations

Following are the key observations from 2016 YTD:

- Q4 showed a higher performance up to -38% than the last year with 5 less LTIs in comparison to Q4 in 2015.
- UEOD, GD and XD directorates had a successful year with no LTIs, GD scored 0 (Zero) LTIs for the second year.
- OSD, OND and CPD directorates have shown an increase in their incidents.
- UID directorate takes the credit scoring 1 LTI in comparison to 8 last year.
- UWD had a better performance in 2016 incurring 68% of the total LTIs occurred in PDO in comparison to 73% in 2015.
- The increase in incident type relating to 'struck by an object' and 'MVI' each by +100% and the decrease is in the "Crush/Trap" by -33% in comparison to 2015.
- There are two increases of "Causational Factors" related to "Defenses" as the most causation, followed by "Communications" in comparison to 2015.
- There are nine decreases (improvements) for the "Causational Factors" related to "Housekeeping", "Hardware", "Training", "Maintenance", "Design", "Incompatible goals", "Procedures", "Organisation" and "Error enforcing conditions". Therefore, extra care is needed to ensure we learn from our previous incidents and to communicate the learnings in a more effective manner.
- The job positions who had the most incidents is "Helper" (6 incidents) followed by "Roustabouts" (4 incidents) then "Engineer" and "Derrickman" (3 incidents each). This highlights the need to ensure adequate supervision is provided, that staff understand their roles and responsibilities, and that we ensure HSE Supervisor Leadership Training is up to date and effectively implemented.
- The majority of injuries were to "Wrist/hands/fingers/thumb" combined (34%), followed by "Ankle/Foot/Toe" Injuries combined (23%). This highlights a lack of understanding of the risks associated with the "Line of Fire".
- The majority of incidents occurred between "08:00am – 12:00pm" (33%) then "16:00pm – 20:00pm" (21%).
- Most of the incidents happened to people between the ages of "26 and 30". This demonstrates the increased risk to younger, less experienced personnel who may lack maturity and are more likely to suffer from risk normalisation.

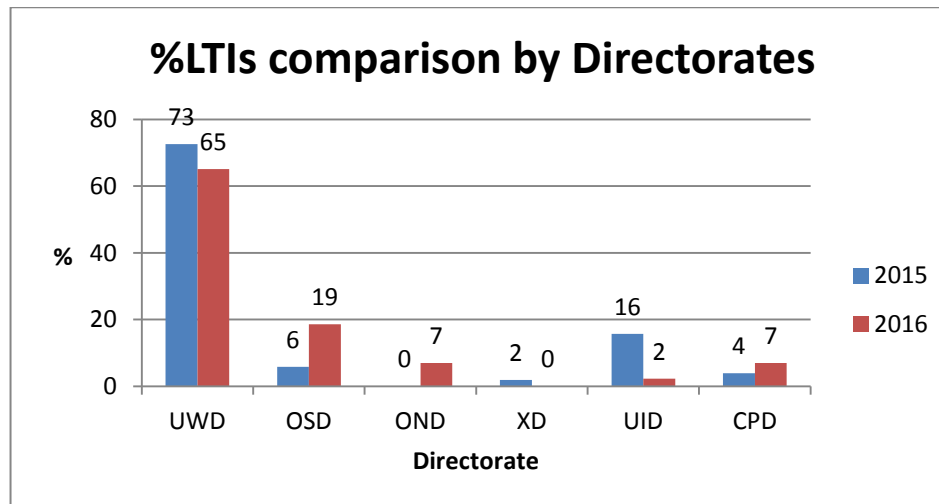
3. Analysis

3.1 Directorate Analysis

3.1.1 Directorate Breakdown YTD

Directorate	Q4			YTD		
	2016	2015	% (-/+)	2016	2015	% (-/+)
UWD	3	11	-73	28	37	-24
OSD	2	1	+100	8	3	+100
OND	1	0	+100	3	0	+100
XD	0	0	0	0	1	-100
UID	1	1	0	1	8	-87
CPD	1	0	0	3	2	+50
Total	8	13	-39	43	51	-16

3.1.2 PDO % LTI Profile by Directorate -2015/2016



3.2 LTIs Per Operational Teams YTD

UWD	13- UWO, 4- UWL, 2- UWB, 4-UWC, 1- OSPTW, 3- UWN, 1- UWOQ
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OSD	4-OSE, 3-OSO, 1 –OSC
CPDM	1- CGR, 1- CRM, 1- CGM
OND	3- ONE
UID	1-UIE

3.3 PDO v Contractor YTD

40	PDO contractors
3	PDO employee

3.4 Contractor information YTD:

There are 23 contractors who suffered LTI incidents YTD, in addition to PDO. The breakdown is as follows:

6 incidents	Dalma Energy.
4 incidents	Weatherford.
3 incidents	Bahwan Exel DHL, PDO.
2 incidents	Abraj, ATE, MBPS, Schlumberger, WPAI, STST ,Cactus(CPDS)
1 incident	Ensign, Medco, SPC, GPS, Al Nahdah, NDSC, Desert Byrne, STS, Galfar, Al Hassan, PDO insourcing Project, L&T, Midwesco.

3.5 LTI Incidents Descriptions YTD

Crushed injury while loading a gas cylinder resulting in finger amputation.
Fall from height resulting in fractured ankle.
Trapped by a mud pump liner resulting in tip finger amputation.
Fall from height resulting in fractured ankle.
Fall from height resulting in fractured forearm.
Struck by the pup joint resulting in fractured big toe.
Hand trapped between rotating belts resulting in fractured ring finger.
Fall and hit the water surface resulting in fractured nose.
Crushed by a falling flange resulting in fractured toe.
Struck by a swung sun shade and fall from height resulting in fractured wrist and pelvis.
Struck by a jerked truck resulting in dislocation of hip, fractured pelvis and wrist.
Motor vehicle incident (MVI) resulting in fatality.
Slipped foot into running mud pump resulting in multiple fractures for ankle and foot.
Slipped from the step resulting in fractured hip.
Slipped while loosening a nut resulting in fractured wrist and elbow.
Struck by a twisted sling rope resulting in fractured hand.
Motor vehicle incident resulting in fatality.

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Crushed by rolling collars resulting in fractured ankle.
Trapped by a jaw handle resulting in fractured and partial amputation of a finger.
Struck by a loss rod from a forklift resulting in fractured leg.
Struck by a heavy welding machine resulting in fractured foot.
Slipped into a pit resulting in fractured ankle.
Trapped by the flair line resulting in fractured ankle.
Trapped by the floor cover resulting in fractured finger.
Struck by a tyre rims resulting in fatality.
Motor vehicle incident (MVI) resulting in fractured arm.
Trapped by a panel frame resulting in fractured thumb and finger.
Struck by a makeup tong resulting in fractured leg.
Trapped between bundles of gratings resulting in fractured thumb.
Struck by a piece of burning rubber resulting in injured face and eye.
Crushed by falling elevator resulting in fractured foot.
Struck by the ratchet resulting in fractured two wrists.
Struck by winch line resulting in face injury.
Trapped between elevator line and elevator resulting in left finger tip amputation.
Trapped between the blow out preventer and the structure resulting in fractured thumb.
Struck by rotating drilling pipe resulting in contusion injuries over the face left side.
Slipped inside the cellar while removing grid resulting in head trauma.
Crushed by gear shifter of the Farr tongs resulting in middle finger tip amputation.
Motor vehicle incident resulting in fractured left leg.
Crushed by a tool rack weighed 280 kg resulting in fractured foot.
Hand Trapped between pipes resulting in fractured finger.
Explosion resulted on 2 nd and 3 rd degree burns.
Motor vehicle Incident resulting in fractured left leg.

3.6 Incident Classification YTD

Type of Incident Causing LTI	No of LTIs YTD 2016	No of LTIs YTD 2015	% (+/-)
Crush/trapped	16	26	-39
Slip, trip, fall	6	8	-33
Struck by object	12	6	+100

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Fall from height	3	6	-50
MVI	5	1	+100
Chemical burns	1	2	-50
Electrical burns	0	1	-100
Rotating Equipment	0	1	-100
Total	43	51	-16

3.7 Actual Severity YTD

Severity		YTD 2016	YTD 2015
a.	Severity 2 (minor injury)	0	2
b.	Severity 3 (major injury)	40	47
c.	Severity 4 (fatality)	3	2

3.8 Potential Severity YTD

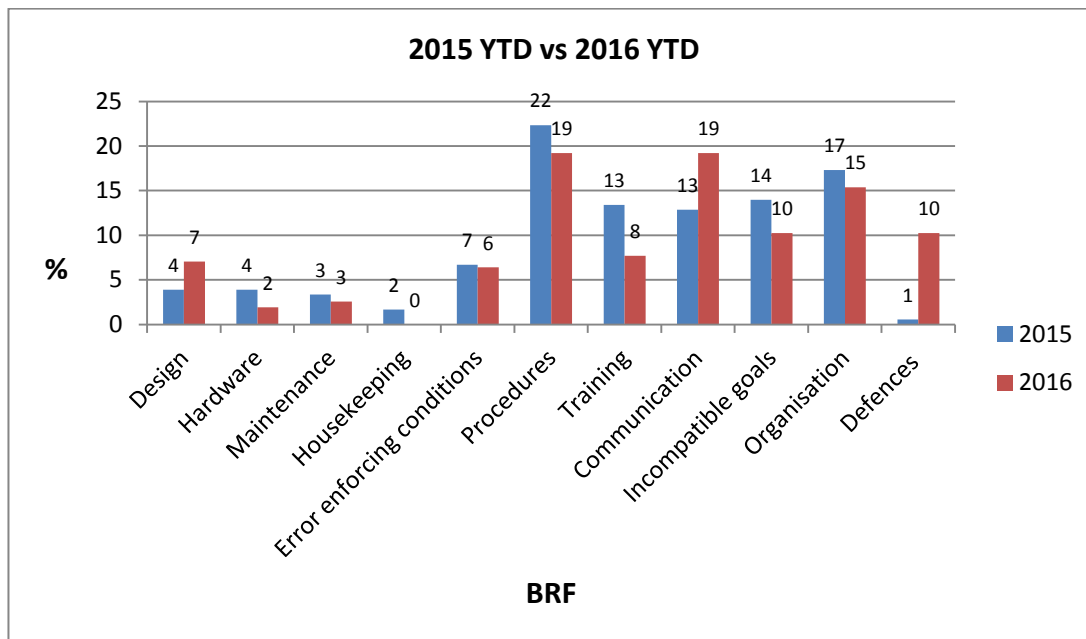
Potential Severity		YTD 2016	YTD 2015
B3	Major injury, heard of in the industry	1	0
B4	Fatality injury, heard of in the industry	1	0
C3	Major injury, has happened in the company	36	47
C4	Fatal injury, has happened in the company	4	2
D2	Minor injury, has happened more than once a year in the company	0	2
D3	Major injury, has happened more than once a year in the company	1	0
	Total	43	51

3.9 Basic Risk Factors (BRF's) YTD

3.9.1 Comparison Table of the BRF Q4 2015 – Q4 2016

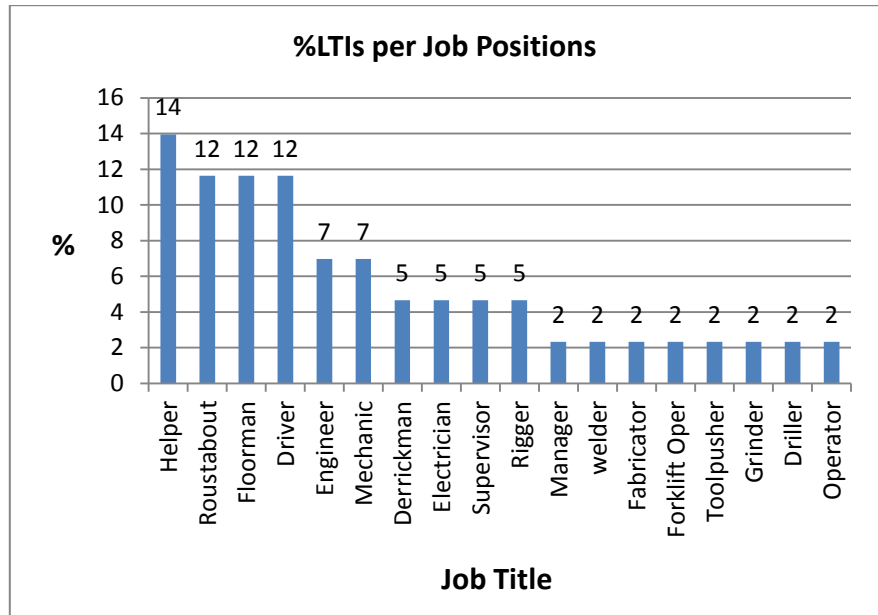
BRF	YTD 2016	YTD 2015	% (+/-)
Design	11	19	-42
Hardware	3	7	-57
Maintenance	4	7	-43
Housekeeping	0	3	-100
Error enforcing conditions	10	13	-23
Procedure	30	40	-25
Training	12	24	-50
Communication	30	28	+7
Incompatible goals	16	26	-39
Organisation	24	31	-23
Defences	16	2	+100

3.9.2 Comparison Graph of the BRF



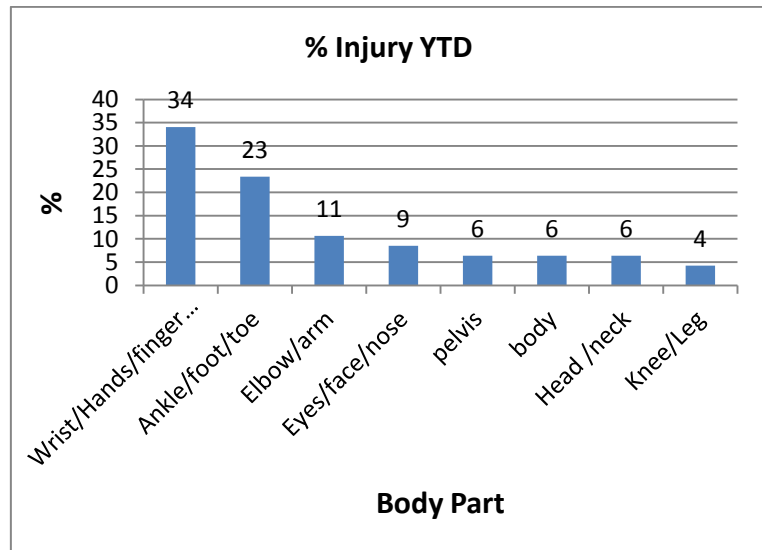
3.10 LTIs per Job Positions YTD

Helper	6
Roustabout	5
Floorman	5
Driver	5
Engineer	3
Mechanic	3
Derrickman	2
Electrician	2
Supervisor	2
Rigger	2
Manager	1
welder	1
Fabricator	1
Forklift Oper	1
Tool pusher	1
Grinder	1
Driller	1
Operator	1



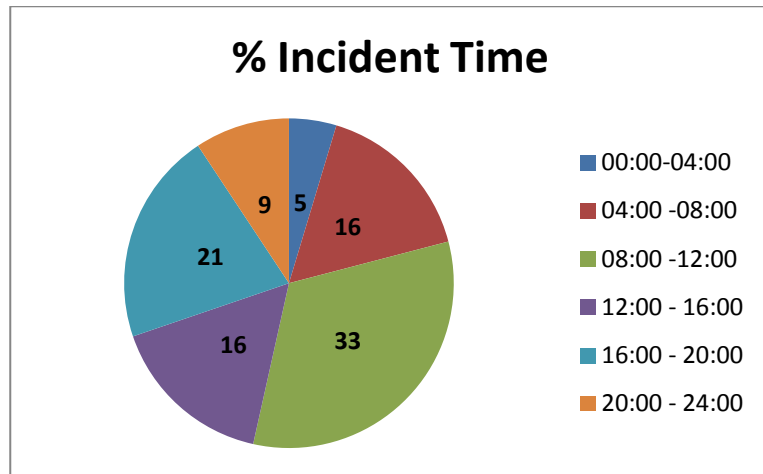
3.11 Parts of Body Injured YTD

Wrist/hands/fingers/thumb	12
Ankle/foot/toe	9
Elbow/arm	4
Eyes/face/nose	3
pelvis	2
body	2
Head/neck	1
Knee/Leg	2



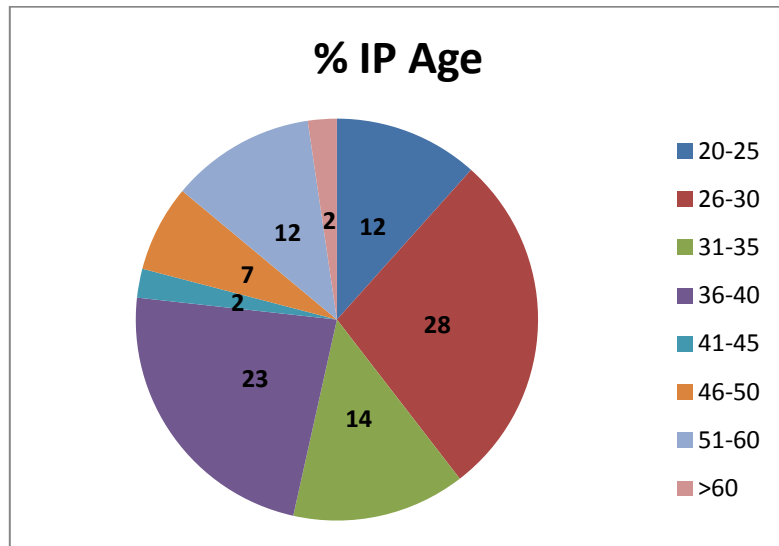
3.12 Time of Incidents YTD

00:00-04:00	2
04:00 -08:00	7
08:00 -12:00	14
12:00 - 16:00	7
16:00 - 20:00	9
20:00 - 00:00	4



3.13 Age of Injured Person (IP) YTD

20-25	5
26-30	12
31-35	6
36-40	10
41-45	1
46-50	3
51-60	5
>60	1



End of Analysis