



Petroleum Development Oman LLC
Incident Investigation team (MSE3)

2017 Q4 LTI Incident Analysis Study

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3 Summary

PDO's LTIF target for 2017 was 0.22. The Q4 result was (0.20), which was better an improvement compared with (0.22) in Q4 in 2016. PDO suffered 4 LTIs in the fourth quarter of 2017, four less than in 2016, but with increased man-hours worked. The following analysis of the incidents is designed to identify trends and points of statistical interest to target future resource.

4 General Observations for 2017

- PDO achieved the best LTIF records in the last 3 years (0.20).
- UWD achieved their best reduction records in the last 3 years (53%).
- OND had the highest records in the last 3 years (17%).
- OSD maintained the same record of the 2016 (20%).
- OND and OSD had the highest records in the last 3 years (13%) and (22%).
- GD added 1 LTI to the records this year after no LTIs for the last 2 years.
- UID remained the same as last year with 1 LTI.
- PDO incident rate increased by 300%, suffering 8 incidents this year comparing to 2 last year and Zero the year before.
- "Crushing and trapping" is the most common cause of LTIs by 40% of the total, followed by "Slips, Trips, and falls" by 24%.
- "Floorman, Driver and Helpers" are the most common job positions incurred LTIs this year same as in 2016.
- The majority of injuries were to "Wrist/hands/fingers/thumb" combined (53%). This highlights a lack of understanding of "Hands Off".
- The majority of incidents occurred on "08:00am – 12:00pm" (29%) followed by "12:00pm – 16:00pm" (22%).
- 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 normalization.

5 Analysis

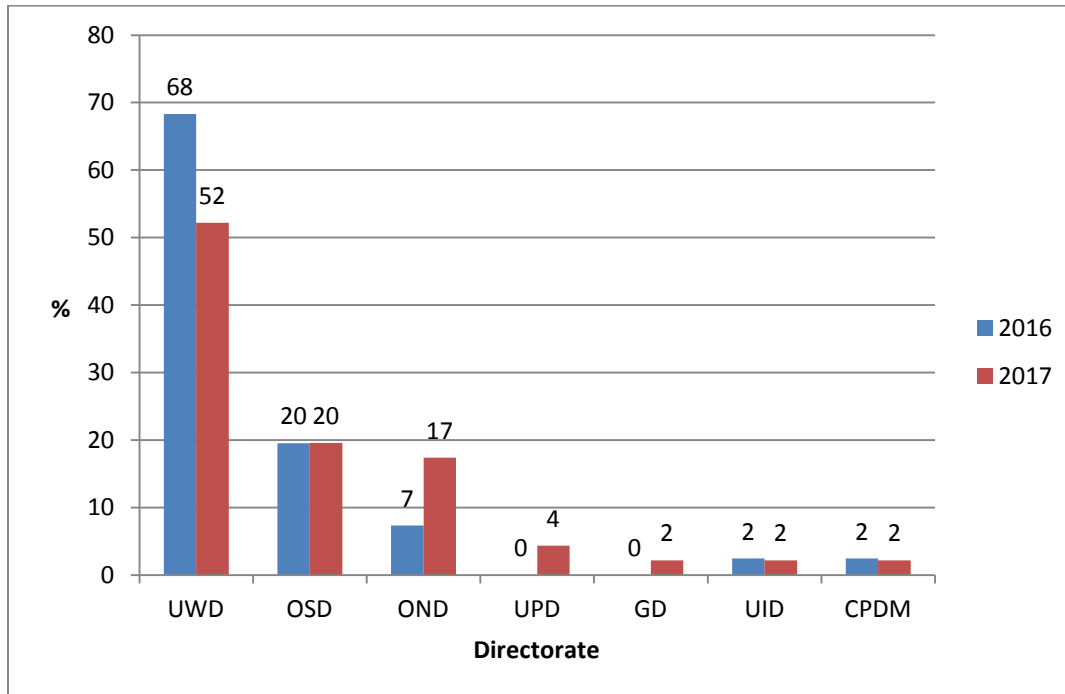
5.1 Directorate Analysis

5.1.1 Directorate Breakdown

Directorate	Q4			YTD		
	2017	2016	% of change	2017	2016	% of change
UWD	1	3	-67	24	28	-14
OSD	1	2	-50	9	8	+13

OND	0	1	-100	6	3	+50
GD	1	0	+100	1	0	+100
UID	1	1	0	1	1	0
CPDM	0	1	-100	1	3	-67
UPD	0	0	0	2	0	+200
Total	4	8	-50	46	43	+7

5.1.2 PDO % LTI Profile by Directorate - 2017/ 2016



5.1.3 LTIs per Operational Teams:-

UWD	12- UWO, 4-UWN, 3-UWB, 5-UWC
OSD	6- OSE, 3- OSC
OND	7-ONE, 1- ONO
UPD	2-UPR
CPDM	1-CKM
UID	1- UIR
GD	1- GGO

5.1.4 PDO v Contractor:

38	PDO contractors
8	PDO employee

5.1.5 Contractor information:

There are 18 contractors who suffered LTI incident YTD in addition to PDO.

The breakdown is as follows:-

8 incidents	PDO
5 incidents	Galfar ,ATE
3 incidents	Dalma Energy, Medco, Shaleem, Petrogas, STST
2 incidents	VAPS , Midwesco
1 incidents	Abraj, Halliburton, NDSC, Sea & Land, Benon, Cactus, Gulf Drilling, Weatherford, Fahud Engineering Service

5.1.6 LTI Incidents Descriptions:

LTI#	Short Description
1	Trapped between the BOP table and BOP screws resulting in fractured finger.
2	Tripped and fall from the back of the truck resulting in fractured wrist.
3	Struck by a pipe which was pulling out of sand dune resulting in fractured leg.
4	Struck by a falling piece of metal weighing 24 kg resulting in fractured foot.
5	Moving Vehicle Incident (MVI) resulting in back injury.
6	Struck by a pipe which was driven over by a tanker resulting in fractured foot.
7	Struck by the trailer's side panel while opining resulting in fractured femur.
8	Struck by the steering wheel of the trailer resulting in fractured finger.
9	Struck by a 6" pipe while fixing it resulting in fractured leg.
10	Struck by a testing bottle in the lab resulting in fractured wrist.
11	Tripped while crossing a pipe resulting in fractured foot.
12	Crushed by the traveling block resulting in fractured hand.
14	Trapped between the joint and the elevator resulting in fractured finger.
14a	Struck by a water hose while laying it resulting in fractured arm.
15	Struck by a 6" line against cutting box resulting in amputated finger tip.
16	Slipped from a crane ladder resulting in fractured wrist and neck.
17	Crushed between the Kelly and the Motor resulting in fractured hand.
18	MVI resulting in fractured collar bone.
19	Trapped in the chapatti machine resulting in amputated thumb and finger
20	Trapped in between the polish rod and the stud resulting in fractured finger.
21	Fall while attempting to descend the monkey board resulting in fractured ankle.
22	Struck by a cylinder while carrying in upstairs resulting in fractured finger.
23	Trapped between the hand rail and the ground resulting in fractured right leg.
24	Struck by twisted water hose resulting in multi fractures on right arm, hand and finger.
25	Fall from the trailer landing on his right hand resulting in fractured wrist.
26	Moving Vehicle Incident (MVI) resulting in fractured pelvis.

27	Moving Vehicle Incident (MVI) resulting in ultimate back pain.
28	Struck by a steel beam on his left foot resulting in fractured 1 st and 2 nd toes.
29	Struck by the link arms of the Top Drive System against structure resulting in fatality.
30	Trapped the finger between the pipe and the elevator resulting in fractured finger.
31	Trapped between Hiab and bus resulting in multiple abrasions to chest and abdomen.
32	Trapped between the rotary table and slips resulting in fractured left big toe.
33	Fall from cabin of 4.3m height to the ground resulting in fractured wrist.
34	Trapped between the elevator handle and the pipe resulting in fractured left thumb.
35	Slipped and fall into the cellar resulting in fractured rib.
36	Struck by the sucker rod while align it resulting in fractured finger.
37	Fall from the trailer while putting dunnage resulting in fractured forearm.
38	Slipped from the ladder and fall to ground resulting in fractured wrist.
39	Flash fire-resulting in burns for both hands.
40	Collapsed trench while working inside resulting in fractured pelvis.
41	Slipped while placing his foot on the ladder resulting in fractured shoulder.
42	Collapsed trench side while welding a pipe resulting in fractured pelvis.
43	Trapped between excavator bucket and the sling resulting in fractured finger.
44	Slipped while attempted to reset the control panel resulting in fractured leg.
45	Trapped between the latch handle and the casing resulting in fractured finger.
46	Struck by a flying piece of the hammer while hammering resulting in fractured finger.

5.1.7 Incident classification:

Type of Incident causing LTI	No of LTIs YTD 2017	No of LTIs YTD 2016	% change from 2016
Crush/Trapped	18	16	+12.5
Slip, Trip, Fall	11	6	+267
Fall from height	2	3	-33
Struck by object	10	12	-17
MVI	4	5	-20
Flash fire	1	0	-100
Chemical burns	0	1	+100
Total	46	43	+7

5.1.8 Actual Severity:

		YTD 2017	YTD 2016
1	Severity 3 (major injury)	45	40
2	Severity 4 (fatality)	1	3

5.1.9 Potential Severity:

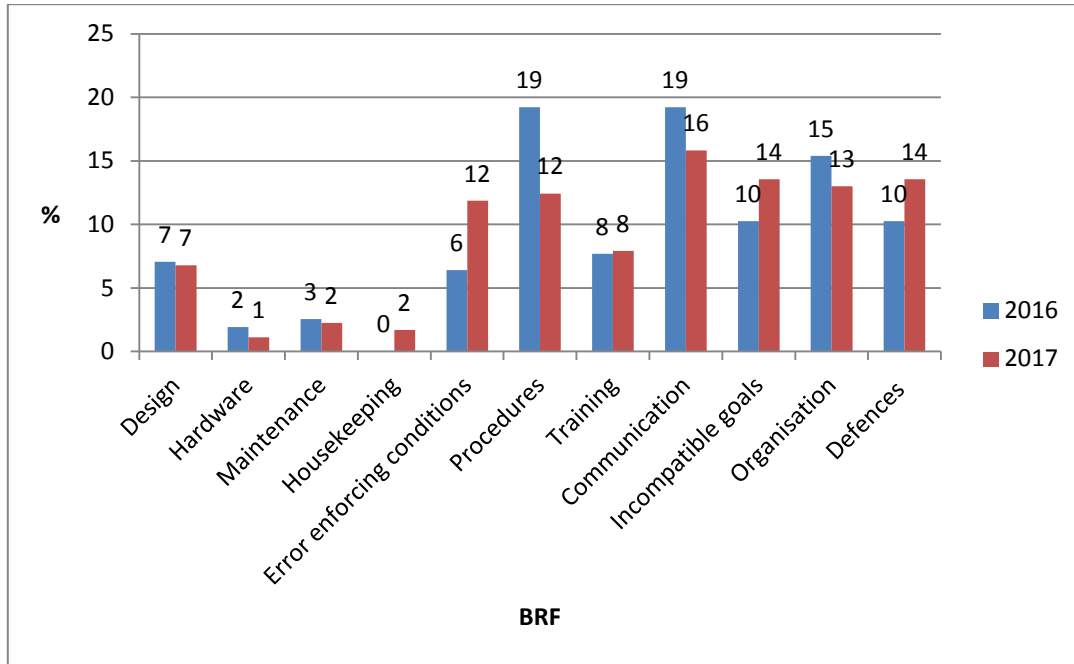
		YTD 2017	YTD 2016
B3	Major injury, heard of in the industry	0	1
B4	Fatality injury, heard of in the industry	0	1
C3	Major injury, has happened in the company	39	36
C4	Fatal injury, has happened in the company	1	4
D3	Major injury, has happened more than once a year in the company	5	1
D4	PTD or up to 3 fatality, has happened more than once in the industry	1	0

5.1.10 BASIC RISK FACTORS (BRF's):

5.1.10.1 Comparison table of the BRF 2017 - 2016:

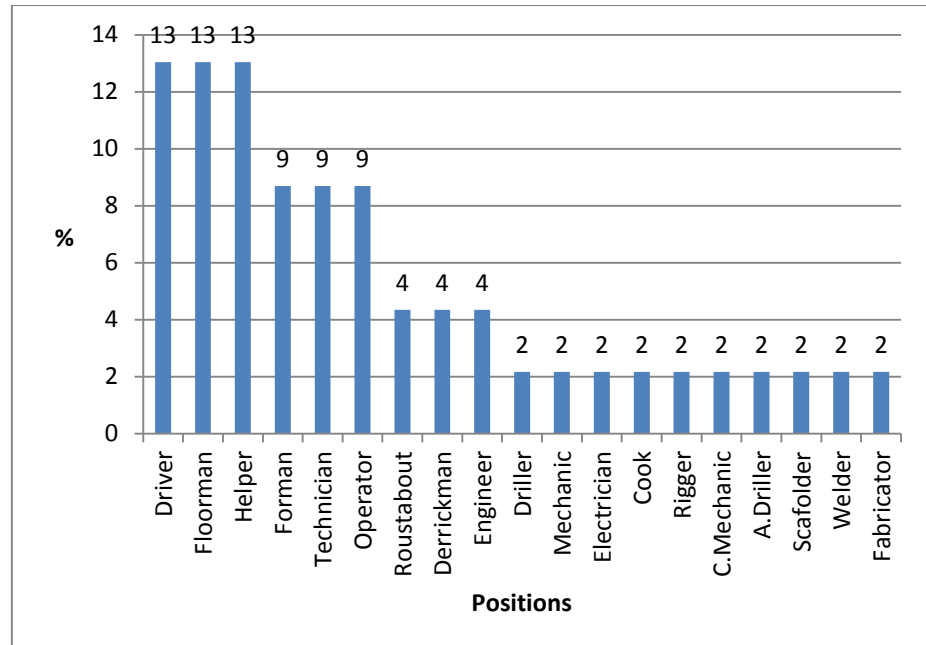
BRF	Q4 2016	Q4 2017
Design	11	12
Hardware	3	2
Maintenance	4	4
Housekeeping	0	3
Error enforcing conditions	10	21
Procedures	30	22
Training	12	14
Communication	30	28
Incompatible goals	16	24
Organisation	24	23
Defences	16	24

5.1.11 Comparison graph of the BRF:



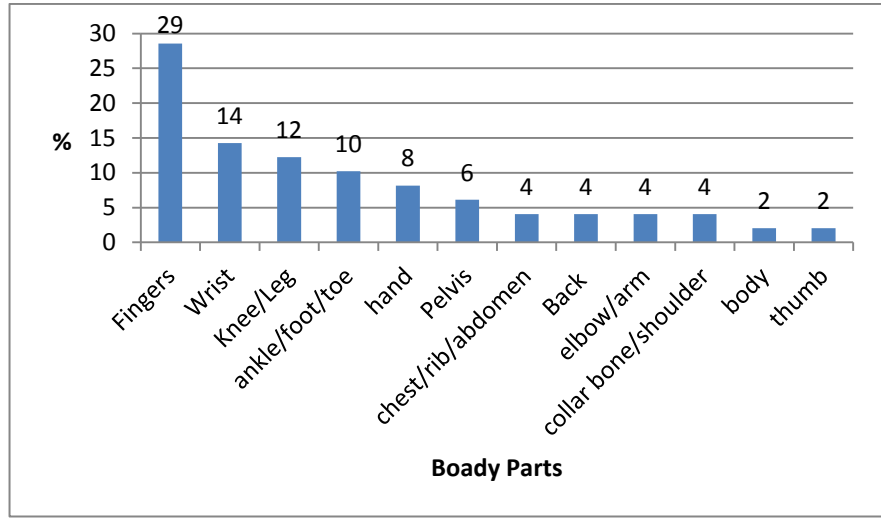
5.1.12 Job positions:-

Driver	6
Floorman	6
Helper	6
Forman	4
Technician	4
Operator	4
Roustabout	2
Derrickman	2
Engineer	2
Driller	1
Mechanic	1
Electrician	1
Cook	1
Rigger	1
Chief Mechanic	1
Assistant Driller	1
Scaffolder	1
Welder	1
Fabricator	1



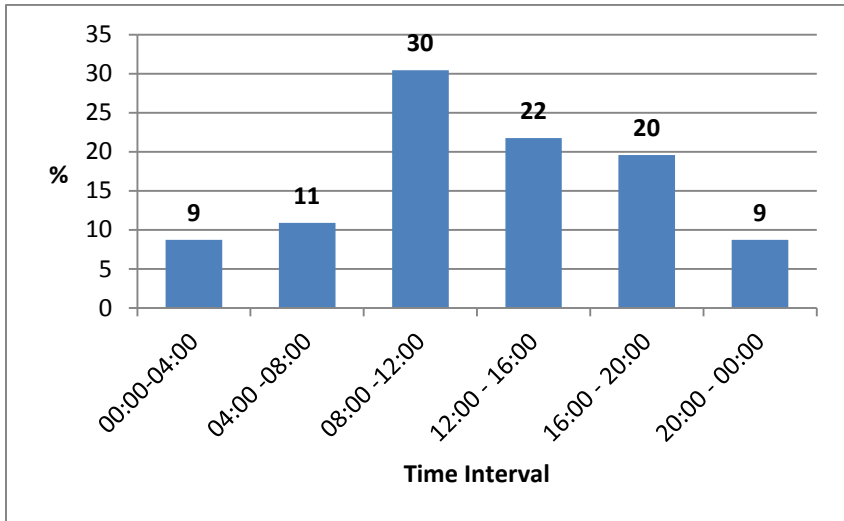
5.1.13 Parts of body injured:-

Fingers	14
Wrist	7
ankle/foot/toe	5
Knee/Leg	6
hand	4
chest/rib/abdomen	2
Back	2
elbow/arm	2
Pelvis	3
collar bone/shoulder	2
body	1
thumb	1



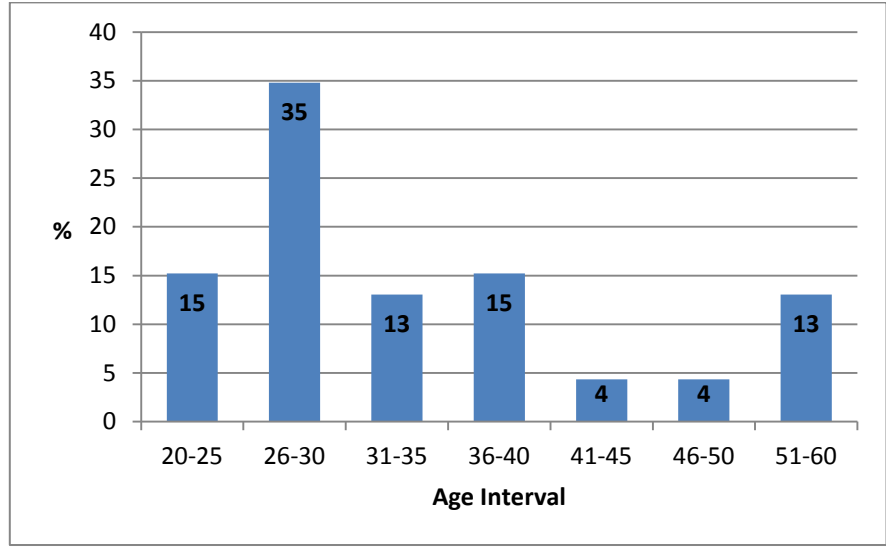
5.1.14 Time of incidents:

00:00-04:00	4
04:00 -08:00	5
08:00 -12:00	14
12:00 - 16:00	10
16:00 - 20:00	9
20:00 - 00:00	4



5.1.15 Age of IP:

20-25	7
26-30	16
31-35	6
36-40	7
41-45	2
46-50	2
51-60	6



6 Summary of Observations for this quarter:

- The number of the LTIs is the lowest in the last 3 years with the month of October free of LTIs.
- UWD achieved their best records in the last 3 years by suffering only 1 LTI.

End of Analysis

