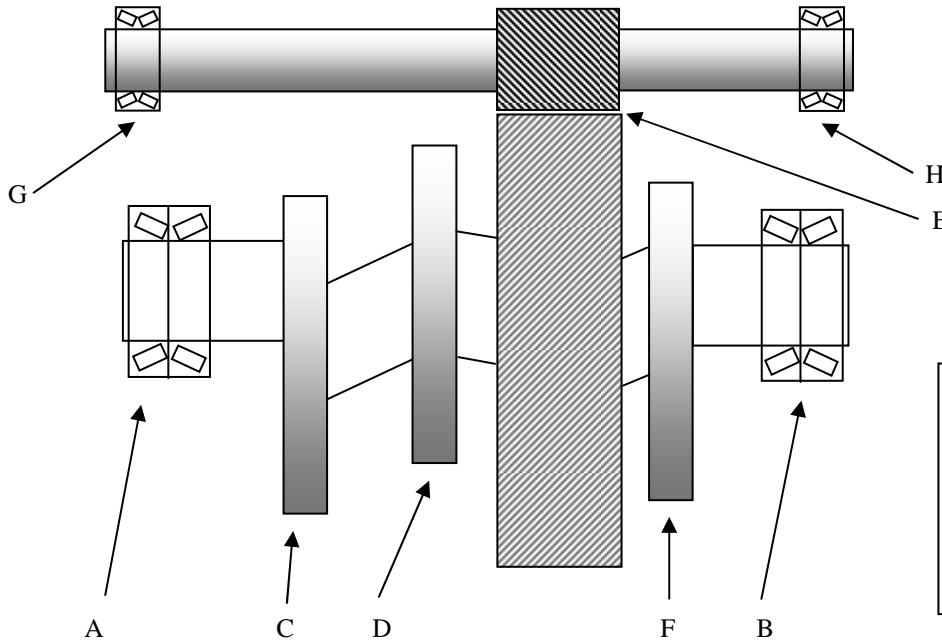




NATIONAL OILWELL VARCO

Pump Inspection Report

Date	Job No	Service Engineer	Customer	Rig Name
3-5-2013	317016	David Alexander	Transocean	Deepwater Millenium
Equipment Type		Equipment S/N		
14-P-220		Pump 3 10929-H		



CONDITION
1 : AS NEW
2 : GOOD
3 : FAIR - Monitor
4 : POOR - Schedule replacement
5 : Urgent Replacement required

All dimensions in inches and from power end

Item	Component	Checks carried out	Condition - Comments
A	LH Main bearing	Bearing clearance	0.004" Good condition
B	RH Main bearing	Bearing clearance	0.005" Good condition
C	LH Eccentric Bearing	Bearing clearance	0.002" Good condition
D	CTR Eccentric Bearing	Bearing clearance	0.004" Good condition
E	Bull gear	Backlash Run-out	LHS 0.047" RHS 0.042" 0.004" Good condition, minor pitting noted
F	RH Eccentric Bearing	Bearing clearance	0.002" Good condition
G	LH Pinion Bearing	Bearing clearance	0.004" Good condition
H	RH Pinion Bearing	Bearing clearance	0.005" Good condition
I	Crankshaft End float	Bearing clearance	0.008" Good condition

Crosshead bearing	Clearance Recorded	Condition & Recommendation
Left	0.003"	Good condition
Centre	0.004"	Good condition
Right.	0.003"	Good condition



Pump Inspection Report

Crosshead /guides	Condition / Recommendation	Front stroke		Back stroke	
		F	B	F	B
Left side	Good condition	0.022"	0.023"	0.022"	0.018"
Centre	Good condition	0.018"	0.020"	0.020"	0.022"
Right side	Good condition	0.012"	0.020"	0.021"	0.023"

Gear	Condition
Bull gear	Good condition, minor pitting noted
Pinion Gear	Good condition, minor pitting noted

Extension rods	Condition	Vertical Run out	Horizontal Run out
Left hand	Good condition	0.002"	0.003"
Centre	Poor condition, major scoring noted	0.007"	0.005"
Right hand	Good condition	0.006"	0.006"

Comments:

The overall visual condition of the pump is good, the pump appears to have been well maintained and the rig crew perform regular inspections and oil changes. There are no major oil leaks from any of the main covers. All secondary retention is in place and in good condition.

Internal oil troughs and pipework all secure and in good order, all troughs cleaned and main brg oil pipes cleaned.

Both magnets cleaned and inspected no steel showing.

Both motors and blowers secure and in good order.

RHS belt and pulleys in good condition and tensioned, unable to check alignment due to time constraints.

LHS belt and pulleys in good condition and tensioned, unable to check alignment due to time constraints.

RHS belt drive guard shows oil in the bottom indicating a pinion oil seal worn and passing.

The centre con rod eccentric brg retaining ring appears not to be square to the brg housing casting, checked with NOV technical support and informed that it is okay. Retorqued and lockwired all the bolts on the con rod.

No NDT/MPI was carried out at this time.

Recommendations:

Replace RHS pinion seal advise doing LHS at the same time as the running hours will be the same for both.

Centre extension rod to be replaced along with new seals in the stuffing box at the same time.

Pinion parts

2 off pinion oil seal original spec YS-10750

If a pinion seal upgrade has been done or needs to be done due to worn pinion shaft

2 off sleeve 1295860

2 off pinion oil seal YS-10755

Extension rod parts

1 off rod 1295083

4 off wiper seals 1295182