









Vendor: 	EPC Contractor : 	HENGAM FERTILIZER PROJECT		Owner: 	MC: 
Job No.	Project No. : 1208	Cause and Effect Diagram for P-101 AB			
		Doc. No.: VD-1208-307A-DIG-131	Rev. : 05		

VENDOR : Roodhart Pump Group
REQ. NO. : 307A
ITEM NO. : 11-P-101-AB
ITEM DESCRIPTION : HP AMMONIA PUMP
PURCHASER DOC. NO. : VD-1208-307A-DIG-131-5
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I-10115A (Start Commands For 11-P-101A)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.					ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5					
1	11-P-101A	1	11-PT-10178A(PAH-10178A)	VD-1208-307A-PID-111-Sh6&7	High Lube Oil Pressure & High Seal Plan Presuure	X					1	11-PM-101A Permision To Start	11-PM-101-A	VD-1208-307A-PID-111-Sh4	3
2		2	11-PT-10182 (PAH-10182)												

Note:
 1- Lube Oil Pressure should reach at least to 2.9barg for permission to start
 2- Seal Plan pressure should reach at Least to 33.5 barg for permission to start
 3. Both lube oil pressure and seal plan 54 pressure should reach at their set piont together for permission to start



I-10115B (Start Commands For 11-P-101B)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.					ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5					
1	11-P-101B	1	11-PT-10178B (PAH-10178B)	VD-1208-307A-PID-111-Sh6&8	High Lube Oil Pressure & High Seal Plan Presuure	X					1	11-PM-101B Permission To Start	11-PM-101-B	VD-1208-307A-PID-111-Sh5	3
2		2	11-PT-10182 (PAH-10182)												

Note:
 1- Lube Oil Pressure should reach at least to 2.9barg for permission to start
 2- Seal Plan pressure should reach at Least to 33.5 barg for permission to start
 3. Both lube oil pressure and seal plan 54 pressure should reach at their set piont together for permission to start



IS-10116A (Trip Commands of 11-P-101A)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.							ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes	
						1	2	3	4	5	6	7						
1	11-P-101A		11-VXE-10175A	VD-1208-307A-PID-111-sh4	High High Radial Vibration at Pump A NDE Bearing (1 out of 2)	X							1	MMS trip Rely Due to Pump A(11-P-101A)	XS-10116AA	VD-1208-307A-PID-111-Sh4		
2			11-VYE-10175A												2	MMS trip Rely Due to Gearbox A(11-GB-101A)	XS-10116AB	VD-1208-307A-PID-111-Sh4
3			11-VXE-10176A	VD-1208-307A-PID-111-sh4	High High Radial Vibration at Pump A DE Bearing (1 out of 2)	X								3	MMS trip Rely Due to Motor A(11-PM-101A)	XS-10116AC	VD-1208-307A-PID-111-Sh4	
4			11-VYE-10176A															
5			11-ZE-10175A	VD-1208-307A-PID-111-sh4	High High AXIAL DISPLACEMENT at Pump A NDE Axial Bearing (2 out of 2)	X												
6			11-ZE-10176A															
7			11-VXE-10177A	VD-1208-307A-PID-111-sh4	High High Radial Vibration at Gearbox A HS Shaft DE Bearing (1 out of 2)		X											
8			11-VYE-10177A															
9			11-VXE-10178A	VD-1208-307A-PID-111-sh4	High High Radial Vibration at Gearbox A HS Shaft NDE Bearing (1 out of 2)		X											
10			11-VYE-10178A															
11			11-VXE-10179A	VD-1208-307A-PID-111-sh4	High High Radial Vibration at Gearbox A LS Shaft Oilpump side Bearing (1 out of 2)		X											
12			11-VYE-10179A															
13			11-VXE-10180A	VD-1208-307A-PID-111-sh4	High High Radial Vibration at Gearbox A LS Shaft Driver side Bearing (1 out of 2)		X											
14			11-VYE-10180A															
15			11-ZE-10177A	VD-1208-307A-PID-111-sh4	High High AXIAL DISPLACEMENT at Gearbox A LS Shaft Oilpump side Bearing (2 out of 2)		X											
16			11-ZE-10178A															
17			11-VXE-10181A	VD-1208-307A-PID-111-sh4	High High Radial Vibration at Driver A DE Bearing (1 out of 2)			X										
18			11-VYE-10181A															
19			11-VXE-10182A	VD-1208-307A-PID-111-sh4	High High Radial Vibration at Driver A NDE Bearing (1 out of 2)				X									
20			11-VYE-10182A															

Note:

IS-10116A (Trip Commands of 11-P-101A)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.							ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes	
						1	2	3	4	5	6	7						
1	11-P-101A		11-TE-10179A	VD-1208-307A-PID-111-sh4	High High Temperature at Pump A NDE Sleeve Bearing (1 out of 2)	X							1	MMS trip Rely Due to Pump A(11-P-101A)	XS-10116AA	VD-1208-307A-PID-111-Sh4		
2			11-TE-10180A												2	MMS trip Rely Due to Gearbox A(11-GB-101A)	XS-10116AB	VD-1208-307A-PID-111-Sh4
3			11-TE-10176A	VD-1208-307A-PID-111-sh4	High High Temperature at Pump A NDE Tilting Pad Active Side Bearing (1 out of 2)	X								3	MMS trip Rely Due to Motor A(11-PM-101A)	XS-10116AC	VD-1208-307A-PID-111-Sh4	
4			11-TE-10175A															
5			11-TE-10178A	VD-1208-307A-PID-111-sh4	High High Temperature at Pump A NDE Tilting Pad Non-Active Side Bearing (1 out of 2)	X												
6			11-TE-10177A															
7			11-TE-10182A	VD-1208-307A-PID-111-sh4	High High Temperature at Pump A DE Sleeve Bearing (1 out of 2)	X												
8			11-TE-10181A															
9			11-TE-10183A	VD-1208-307A-PID-111-sh4	High High Temperature at Gearbox A HS Shaft DE Sleeve Bearing (1 out of 2)		X											
10			11-TE-10184A															
11			11-TE-10185A	VD-1208-307A-PID-111-sh4	High High Temperature at Gearbox A HS Shaft NDE Sleeve Bearing (1 out of 2)		X											
12			11-TE-10186A															
13			11-TE-10190A	VD-1208-307A-PID-111-sh4	High High Temperature at Gearbox A LS Shaft Oilpump side Sleeve Bearing (1 out of 2)		X											
14			11-TE-10189A															
15			11-TE-10191A	VD-1208-307A-PID-111-sh4	High High Temperature at Gearbox A LS Shaft Driver side Sleeve Bearing (1 out of 2)		X											
16			11-TE-10192A															
17			11-TE-10173A	VD-1208-307A-PID-111-sh4	High High Temperature at Gearbox A LS Shaft Oilpump side Tilting Pad Active Side Bearing (1 out of 2)		X											
18			11-TE-10174A															
19			11-TE-10187A	VD-1208-307A-PID-111-sh4	High High Temperature at Gearbox A LS Shaft Oilpump side Tilting Pad Non-Active Side Bearing (1 out of 2)		X											
20			11-TE-10188A															
21			11-TE-10193A	VD-1208-307A-PID-111-sh4	High High Temperature at Driver A DE Bearing (1 out of 2)			X										
22			11-TE-10194A															
23			11-TE-10195A	VD-1208-307A-PID-111-sh4	High High Temperature at Driver A NDE Bearing (1 out of 2)			X										
24			11-TE-10196A															

Note:

IS-10116A (Trip Commands of 11-P-101A)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.						ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5	6					
1	11-P-101A		XS-10116AA	VD-1208-307A-PID-111-sh4	Common MMS trip signal due to Pump A(11-P-101A)	X	X					1	Motor Trip (11-PM-101-A)	11-PM-101-A	VD-1208-307A-PID-111-Sh4	
2			XS-10116AB	VD-1208-307A-PID-111-sh4	Common MMS trip signal due to Gearbox A(11-GB101A)	X	X					2	AUX. LUBE OIL PUPM A Start	11-P-101A-PM2	VD-1208-307A-PID-111-Sh7	1
3			XS-10116AC	VD-1208-307A-PID-111-sh4	Common MMS trip signal due to Motor A(11-PM-101A)	X	X									


Note:
 1- If pump trips based on high high vibration or high high bearings temperature, auxiliary lube oil pump should start and run for 5 min until main shaft stop to rotate (I-10116A)

IS-10116A (Trip Commands of 11-P-101A)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.							ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes		
						1	2	3	4	5	6	7							
3	11-P-101A	2	11-PT-10175AA	VD-1208-307A-PID-111-sh7	Low Low Lube Oil Pressure Lube Oil Skid A (PSLL-10175A) (2 out of 3)								1	Motor Trip (11-PM-101-A)	11-PM-101-A	VD-1208-307A-PID-111-Sh4			
4		2	11-PT-10175AB				X		X						2	AUX. LUBE OIL PUPM A Start	11-P-101A-PM2	VD-1208-307A-PID-111-Sh7	
5		2	11-PT-10175AC													3	AUX. LUBE OIL PUPM A Stop	11-P-101A-PM2	VD-1208-307A-PID-111-Sh7
6		3	11-PT-10181C	VD-1208-307A-PID-111-sh6	Low Low Seal Plan Pressure (PSLL-10181) (2 out of 3)														
7		3	11-PT-10181D				X	X											
8		3	11-PT-10181E																

Note:

- 1- If pump trips based on lube oil pressure, then aux lube oil pump should be stopped due to preventing lube oil leakage
- 2- If Lube oil pressure reaches to less than 2barg, main pump should be tripped
- 3- If seal Plan 54 pressure reaches less than 31.2 barg, main pump should trip and aux lube oil pump should start and run for 5 min until shaft stop to rotate. Main and Aux condensate pumps should be stopped manually by operator after depressurizing of main pump



IS-10116B (Trip Commands of 11-P-101B)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.							ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes	
						1	2	3	4	5	6	7						
1	11-P-101B		11-VXE-10175B	VD-1208-307A-PID-111-sh5	High High Radial Vibration at Pump B NDE Bearing (1 out of 2)	X							1	MMS trip Rely Due to Pump B(11-P-101B)	XS-10116BA	VD-1208-307A-PID-111-sh5		
2			11-VYE-10175B												2	MMS trip Rely Due to Gearbox B(11-GB-101B)	XS-10116BB	VD-1208-307A-PID-111-sh5
3			11-VXE-10176B	VD-1208-307A-PID-111-sh5	High High Radial Vibration at Pump B DE Bearing (1 out of 2)	X								3	MMS trip Rely Due to Motor B(11-PM-101B)	XS-10116BC	VD-1208-307A-PID-111-sh5	
4			11-VYE-10176B															
5			11-ZE-10175B	VD-1208-307A-PID-111-sh5	High High AXIAL DISPLACEMENT at Pump B NDE Axial Bearing (2 out of 2)	X												
6			11-ZE-10176B															
7			11-VXE-10177B	VD-1208-307A-PID-111-sh5	High High Radial Vibration at Gearbox B HS Shaft DE Bearing (1 out of 2)		X											
8			11-VYE-10177B															
9			11-VXE-10178B	VD-1208-307A-PID-111-sh5	High High Radial Vibration at Gearbox B HS Shaft NDE Bearing (1 out of 2)		X											
10			11-VYE-10178B															
11			11-VXE-10179B	VD-1208-307A-PID-111-sh5	High High Radial Vibration at Gearbox B LS Shaft Oilpump side Bearing (1 out of 2)		X											
12			11-VYE-10179B															
13			11-VXE-10180B	VD-1208-307A-PID-111-sh5	High High Radial Vibration at Gearbox B LS Shaft Driver side Bearing (1 out of 2)		X											
14			11-VYE-10180B															
15			11-ZE-10177B	VD-1208-307A-PID-111-sh5	High High AXIAL DISPLACEMENT at Gearbox B LS Shaft Oilpump side Bearing (2 out of 2)		X											
16			11-ZE-10178B															
17			11-VXE-10181B	VD-1208-307A-PID-111-sh5	High High Radial Vibration at Driver B DE Bearing (1 out of 2)			X										
18			11-VYE-10181B															
19			11-VXE-10182B	VD-1208-307A-PID-111-sh5	High High Radial Vibration at Driver B NDE Bearing (1 out of 2)			X										
20			11-VYE-10182B															

Note:

IS-10116B (Trip Commands of 11-P-101B)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.							ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes	
						1	2	3	4	5	6	7						
1	11-P-101B		11-TE-10179B	VD-1208-307A-PID-111-sh5	High High Temperature at Pump B NDE Sleeve Bearing (1 out of 2)	X							1	MMS trip Rely Due to Pump B(11-P-101B)	XS-10116BA	VD-1208-307A-PID-111-sh5		
2			11-TE-10180B												2	MMS trip Rely Due to Gearbox B(11-GB-101B)	XS-10116BB	VD-1208-307A-PID-111-sh5
3			11-TE-10176B	VD-1208-307A-PID-111-sh5	High High Temperature at Pump B NDE Tilting Pad Active Side Bearing (1 out of 2)	X								3	MMS trip Rely Due to Motor B(11-PM-101B)	XS-10116BC	VD-1208-307A-PID-111-sh5	
4			11-TE-10175B															
5			11-TE-10178B	VD-1208-307A-PID-111-sh5	High High Temperature at Pump B NDE Tilting Pad Non-Active Side Bearing (1 out of 2)	X												
6			11-TE-10177B															
7			11-TE-10182B	VD-1208-307A-PID-111-sh5	High High Temperature at Pump B DE Sleeve Bearing (1 out of 2)	X												
8			11-TE-10181B															
9			11-TE-10183B	VD-1208-307A-PID-111-sh5	High High Temperature at Gearbox B HS Shaft DE Sleeve Bearing (1 out of 2)		X											
10			11-TE-10184B															
11			11-TE-10185B	VD-1208-307A-PID-111-sh5	High High Temperature at Gearbox B HS Shaft NDE Sleeve Bearing (1 out of 2)		X											
12			11-TE-10186B															
13			11-TE-10190B	VD-1208-307A-PID-111-sh5	High High Temperature at Gearbox B LS Shaft Oilpump side Sleeve Bearing (1 out of 2)		X											
14			11-TE-10189B															
15			11-TE-10191B	VD-1208-307A-PID-111-sh5	High High Temperature at Gearbox B LS Shaft Driver side Sleeve Bearing (1 out of 2)		X											
16			11-TE-10192B															
17			11-TE-10173B	VD-1208-307A-PID-111-sh5	High High Temperature at Gearbox B LS Shaft Oilpump side Tilting Pad Active Side Bearing (1 out of 2)		X											
18			11-TE-10174B															
19			11-TE-10187B	VD-1208-307A-PID-111-sh5	High High Temperature at Gearbox B LS Shaft Oilpump side Tilting Pad Non-Active Side Bearing (1 out of 2)		X											
20			11-TE-10188B															
21			11-TE-10193B	VD-1208-307A-PID-111-sh5	High High Temperature at Driver B DE Bearing (1 out of 2)			X										
22			11-TE-10194B															
23			11-TE-10195B	VD-1208-307A-PID-111-sh5	High High Temperature at Driver B NDE Bearing (1 out of 2)			X										
24			11-TE-10196B															

Note:

IS-10116B (Trip Commands of 11-P-101B)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.						ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5	6					
1	11-P-101B		XS-10116BA	VD-1208-307A-PID-111-sh5	Common MMS trip signal due to Pump B(11-P-101B)	X	X					1	Motor Trip (11-PM-101-B)	11-PM-101-B	VD-1208-307A-PID-111-Sh5	
2			XS-10116BB	VD-1208-307A-PID-111-sh5	Common MMS trip signal due to Gearbox B(11-GB101B)	X	X					2	AUX. LUBE OIL PUPM B Start	11-P-101B-PM2	VD-1208-307A-PID-111-Sh8	1
3			XS-10116BC	VD-1208-307A-PID-111-sh5	Common MMS trip signal due to Motor B(11-PM-101B)	X	X									

Note:
 1- If pump trips based on high high vibration or high high bearings temperature, auxiliary lube oil pump should start and run for 5 min until main shaft stop to rotate (I-10116B)

IS-10116B (Trip Commands of 11-P-101B)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.							ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes		
						1	2	3	4	5	6	7							
1	11-P-101B	2	11-PT-10175BA	VD-1208-307A-PID-111-sh8	Low Low Lube Oil Pressure Lube Oil Skid B (PSLL-10175B) (2 out of 3)								1	Motor Trip (11-PM-101-B)	11-PM-101-B	VD-1208-307A-PID-111-Sh5			
2		11-PT-10175BB				X		X						2	AUX. LUBE OIL PUPM B Start	11-P-101B-PM2	VD-1208-307A-PID-111-Sh8		
3		11-PT-10175BC													3	AUX. LUBE OIL PUPM B Stop	11-P-101B-PM2	VD-1208-307A-PID-111-Sh8	1
4		3	11-PT-10181C	VD-1208-307A-PID-111-sh6	Low Low Seal Plan Pressure (PSLL-10181) (2 out of 3)														
5		3	11-PT-10181D				X	X											
6		3	11-PT-10181E																

Note:
 1- If pump trips based on lube oil pressure, then aux lube oil pump should be stopped due to preventing lube oil leakage
 2- If Lube oil pressure reaches to less than 2barg, main pump should be tripped
 3- If seal Plan 54 pressure reaches less than 31.2 barg, main pump should trip and aux lube oil pump should start and run for 5 min until shaft stop to rotate. Main and Aux condensate pumps should be stopped manually by operator after depressurizing of main pump

I-10117 (Aux Seal System Pump Start/Stop)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.								ITEM NO.	EFFECT	TAG NO.	P&ID DWG. NO.	Notes
						1	2	3	4	5	6	7	8					
1	Seal System Unit for 11-P-101A/B		11-PT-10182 (PAL-10182)	VD-1208-307A-PID-111-Sh6	Low Pressure in Seal Plan 54	X							1	MAIN/AUX CONDENSATE PUMP 1 and 2 Start	11-P-101-PM3&4&5&6	VD-1208-307A-PID-111-Sh6	1	
2			11-PT-10182 (PAHH-10182)	VD-1208-307A-PID-111-Sh6	High High Pressure in Seal Plan 54		X						2	MAIN/AUX CONDENSATE PUMP 1 and 2 Stop	11-P-101-PM3&4&5&6	VD-1208-307A-PID-111-Sh6	2	

Note:

1- If 11-P-101-P3&P4 as main pumps are already in service and Low pressure in seal plan 54 initiates at pressure lower than 33.2barg, then 11-P-101-P5&P6 should be started as auxiliary pumps by I-10117, If 11-P-101-P5&P6 as main pumps are already in service and Low pressure in seal plan 54 initiates at pressure lower than 33.2barg, then 11-P-101-P3&P4 should be started as auxiliary pumps by I-10117

2- If 11-P-101-P5&P6 as auxiliary pumps are in service and high high pressure in seal plan 54 initiates at pressure higher than 41.5barg, Then 11-P-101-P5&P6 should be stopped by I-10117, If 11-P-101-P3&P4 as auxiliary pumps are in service and high high pressure in seal plan 54 initiates at pressure higher than 41.5barg, Then 11-P-101-P3&P4 should be stopped by I-10117

I-10118A (Aux Lube Oil Pump A Start/Stop)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.						ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5	6					
1	Lube Oil Unit for 11-P-101A	1	11-PT-10178A (PAHH-10178A)	VD-1208-307A-PID-111-Sh7	High High Pressure in Lube Oil unit A		X					1	AUX. LUBE OIL PUPM A Start	11-P-101A-PM2	VD-1208-307A-PID-111-Sh7	
2		2	11-PT-10178A (PAL-10178A)	VD-1208-307A-PID-111-Sh7	Low Pressure in Lube Oil unit A	X						2	AUX. LUBE OIL PUPM A Stop	11-P-101A-PM2	VD-1208-307A-PID-111-Sh7	

Note:
 1- Aux lube oil Pump A stop at 3 barg if the pump 11-P-101A is running. However if 11-P-101A tripped and there is no running signal. this pump will start and remain the pressure of the lube oil line for 5 min until shaft stopped to rotate
 2- Low Pressure of Lube oil unit A will Start the Auxilliary lube oil pump @2.5barg

5

I-10118B (Aux Lube Oil Pump B Start/Stop)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.						ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5	6					
1	Lube Oil Unit for 11-P-101B	1	11-PT-10178B (PAHH-10178B)	VD-1208-307A-PID-111-Sh8	High High Pressure in Lube Oil unit B		X					1	AUX. LUBE OIL PUPM B Start	11-P-101B-PM2	VD-1208-307A-PID-111-Sh8	
2		2	11-PT-10178B (PAL-10178B)	VD-1208-307A-PID-111-Sh8	Low Pressure in Lube Oil unit B	X						2	AUX. LUBE OIL PUPM B Stop	11-P-101B-PM2	VD-1208-307A-PID-111-Sh8	

Note:
 1- Aux lube oil Pump A stop at 3 barg if the pump 11-P-101B is running. However if 11-P-101B tripped and there is no running signal. this pump will start and remain the pressure of the lube oil line for 5 min until shaft stopped to rotate
 2- Low Pressure of Lube oil unit B will Start the Auxilliary lube oil pump @2.5barg

I-10119A (Lube Oil Heater A Start/Stop)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.						ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5	6					
1	Lube Oil Unit for 11-P-101A		11-TT-10173A (TAH-10173A)	VD-1208-307A-PID-111-Sh7	High Temperature in Lube Oil Reservoir A		X					1	Heater Lube Oil Tank- Pump A Start	11-P-101A-H1	VD-1208-307A-PID-111-Sh7	
2			11-TT-10173A(TAL-10173A)	VD-1208-307A-PID-111-Sh7	Low Temperature in Lube Oil Reservoir A	X						2	Heater Lube Oil Tank- Pump A Stop	11-P-101A-H1	VD-1208-307A-PID-111-Sh7	
3			11-LT-10175A (LALL-10175A)	VD-1208-307A-PID-111-Sh7	Low Low Level in Lube Oil Reservoir A		X									

Note:

I-10119B (Lube Oil Heater B Start/Stop)

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.						ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5	6					
1	Lube Oil Unit for 11-P-101B		11-TT-10173B (TAH-10173B)	VD-1208-307A-PID-111-Sh8	High Temperature in Lube Oil Reservoir B		X					1	Heater Lube Oil Tank- Pump B Start	11-P-101B-H1	VD-1208-307A-PID-111-Sh8	
2			11-TT-10173B(TAL-10173B)	VD-1208-307A-PID-111-Sh8	Low Temperature in Lube Oil Reservoir B	X						2	Heater Lube Oil Tank- Pump B Stop	11-P-101B-H1	VD-1208-307A-PID-111-Sh8	
3			11-LT-10175B (LALL-10175B)	VD-1208-307A-PID-111-Sh8	Low Low Level in Lube Oil Reservoir B		X									

Note:

Control Signals from FCS

ITEM NO.	GROUP	NOTE	TAG NO.	P&ID DWG. NO.	CAUSE	EFFECT NO.							ITEM NO.	EFFECT	TAG NO.	P&ID DWG.NO.	Notes
						1	2	3	4	5	6	7					
1	11-P-101 A/B		11-PDT-10175A (PDIC-10175A)	VD-1208-307A-PID-111-Sh4	Pump A Leak-off Line Differential Pressure	X							1	PRESSURE CONTROL VALVE	11-PDV-10175A	VD-1208-307A-PID-111-Sh6	1
2			11-PDT-10175B (PDIC-10175B)	VD-1208-307A-PID-111-Sh5	Pump B Leak-off Line Differential Pressure		X						2	PRESSURE CONTROL VALVE	11-PDV-10175B	VD-1208-307A-PID-111-Sh6	2
3			11-LT-10176(LIC-10176)	VD-1208-307A-PID-111-Sh6	CONDENSATE RESERVOIR Level			X					3	Demin Water LEVEL CONTROL VALVE	11-LV-10175	VD-1208-307A-PID-111-Sh6	3

Note:
 1- Control Valve 11-PDV-10175A controlled by the leak off line differential pressure 11-PDT-10175A to keep 2.25 barg pressure differences
 2- Control Valve 11-PDV-10175B controlled by the leak off line differential pressure 11-PDT-10175B to keep 2.25 barg pressure differences
 3- Condensate Tank Level Controlled by 11-LV-10175 which is controlled by the level transmiiter 11-LT-10176



Roodhart Pump Group

Comment / Response Sheet No. VD-1208-307A-DIG-131-4 Comments response	Reference No.: 1308-2285 P-101 A/B	Date of comments: 19-04-2023
Attached Document no.: VD-1208-307A-DIG-131-4	Document title: Cause and Effect Diagram	Date of response: 03-09-2024

Item No.	Client Comments	Vendor Clarifications/Response	Reply
Page 15 of 19	Shall be corrected: If 11-P-101A tripped and there is no running signal,...	Noted	
Page 16 of 19	Shall be corrected: If 11-P-101B tripped and there is no running signal,...	Noted	