

Linde attendees:  
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**NEWPORT15 Commissioning tasks**

Betrifft / Reference: **NEWPORT15 Commissioning task list**  
 Ort, Datum / Place, Date: Pfunggen, 21.02.2017  
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Traktanden /  
Agenda item

1. Pre- and commissioning

Linde Trips to JLab:  
 1st trip: 2 wks (est 4/24-5/5), items 1-79  
 back to Linde for ~1 wk for programming changes  
 2nd trip: 3-4 wks?, items 86-106, cooldown and acceptance

Can still use dewar to fill VTA (not during tests) (~1 wk affected)  
 Single acceptance test ~12-24 hrs  
 min 3 acceptance tests (max liq, max refr, lowest P/min load)

Linde tasks

1. Pre- and commissioning

Nr.	Pre commissioning tasks	Time frame
1	Controls and settings	1week
2	Check of piping according P&ID	
3	Check wiring of the control system AI/DI signals	
4	Check the function and assembly of the installed components	
5	Check the function of the WEKA - valves and positioner	
6	Check the function of the turbines break valves (inverse)	
7	Check function of the safety valves	
8	Check pressure drop over the turbine inlet valve (closing time 30-40 SEC)	
9	Check control and survey instrumentation of correct function	
10	Check parameters of the turbines in the control software	
11	Check the settings of the turbines speed measurements	
12	Check flow of cooling water for the turbines	
13	Check instrument air settings	
14	Vacuum system cold box and test cap	2days
15	Fill in the vacuum pump oil (roughing pump)	
16	Release the nitrogen pressure (50mbar) to atmosphere	
17	Function test of V3911, SV3980, SV3410, PI3905 and PIS 3496	
18	Check the software of the Pump P3910/ P3980	
19	Switch ON the Vacuum system P3910/ P3980	
20	Pump out CBX and test cap Jlab can pump and backfill vacuum ahead of schedule	
21	Backfill with dry Nitrogen (drying process)	

Task not applicable

JLab task

22	Pump out CBX and test cap, start P3980	
23	Monitor vacuum system and vacuum values	
24	<b>Commissioning activities</b>	2days
25	Regeneration of oil Adsorber charcoal – ORS Adsorber (if necessary)	
26	Regeneration of CBX 80K/ <del>20K</del> Adsorber (if necessary) <i>We can regen if needed</i>	
27	<b>Control system Siemens</b>	1day
28	Install plc program	
29	Install WinCC (visualisation system)	
30	Check and simulate the logic, signal and loop check	
31	<b>Pump and Purge of gas buffer</b>	1day
32	Check and close all valves of pure gas buffer D2177	
33	3-5x pump and purge the He-Buffer (5-10 mbar) (if necessary)	
34	Fill up the Buffer with clean He 5.0 up to 10 bar (if necessary)	
35	<b>Pump and Purge of complete Coldbox</b>	1day
36	Check and initialize of all cryogenic valves	
37	Check all transferlines and connections	
38	Check all safety valve positions	
39	Check temp controller TIC, press. Controller PIC and cryogenic valves	
40	3-5x pump and purge of Coldbox without compressor, GMP and ORS	
41	Isolate Coldbox sections HP, LP, Ads, MTL1-4	
42	<b>Cryo Adsorber and Gas Analyzer (commissioning tools)</b>	1day
43	Installation of the cryo Adsorber to GMP ports V2153/ 2154 (if available)	
44	Installation of the Gas Analyzer Q2160 (if available)	
45	<b>Compressor GMP/ ORS</b>	5days
46	Check parameters and control system of compressor	
47	Check Coalescer Bekomat and oil return line	
48	Installation of the temporary F3100 and F2200 filter (Felt)	
49	Evacuation of the Compressor system via V2290/ KF25	
50	Check availability of compressor oil and cooling water	
51	Check cooling water for flow and leak tightness	
52	Fill in compressor oil via drain port of oil separator by using a flexible hose	
53	2liter oil are filled to suction valve while rotating the coupling manually	
54	3x pump and purge the Compressor system (5-10 mbar)	
55	Fill up the compressor system with clean He 5.0 up to atmosphere pressure	

56	Check all valves are open or set to auto mode	
57	Fill up HD (PI2160) to 8 bar with clean He 5.0	
58	Check rotation direction of the compressor, clockwise rotating field	
59	Compressor test run and adjustment (PC2240 and PC2160), CV2150 closed	
60	<b>Installation Turbine Dummies and Break cooler</b>	1day
61	Installation of the turbine dummies and break cooler including cooling water <b>LKT will check if plates or dummies currently installed</b>	
62	3-5x pump and purge of the CBX (5-10 mbar)	
63	<b>Cleaning and circulation thru the system</b>	3days
64	Open V3200, V3100 <b>Find alt. ways to send gas into system</b>	
65	Compressor start up, HP @ 10bara	
66	Circulate and clean the System with the Cryo Adsorber	
67	Measurement of the Gas quality (N <sub>2</sub> <10 vpm, H <sub>2</sub> O <10vpm) <b>check hydrometer</b>	
68	Adjustment of all parameters of the turbines (inlet valve, etc.)	
69	Check cleanliness of the control valve seats CV3170 and CV3290	
70	Circulate warm helium through Dewar	
71	Check cleanliness of the control valve seats CV3165 and CV3160	
72	Circulate warm helium through dewar	
73	Compressor stop	
74	Clean F2200 compressor inlet filter	
75	Remove felt of F3100	
76	3x pump and purge the Compressor system (5-10 mbar)	
77	<b>Installation of Turbines</b> <b>Filters installed w/ turbines. Bearing gas set on 1st turbine start</b>	
78	Remove dummies, installation of the turbines	
79	3-5x pump and purge the CBX system (5-10 mbar)	
80	<b>Installation of cold pump if any</b>	
81	assembly of electrical drive with insulation body and rotating parts	
82	installation of cold pump to cold housing of coldbox	
83	evacuation of cold pump process lines	
84	initial drive procedure (FC is controlled locally via software)	
85	3-5x pump and purge the CBX system (5-10 mbar)	
86	<b>Commissioning tasks</b>	5days
87	<b>Cool down (liquefier only)</b> <b>Cooldown w/ turbines, no LN2</b>	
88	First cool down	
89	Start with warm plant, check cold start behaviour <b>Looking at turbine start</b>	
90	Adjustment of all parameters <b>Bearing gas set</b>	

Check w Mat  
about this

## Linde ok w/ vaporizer w/ flow meter

91	Run installation with different load, warm up plant	
92	Cool down with LN2 precooling	1day
93	Check availability of LN2 and supply pressure	
94	Cool down with LN2 precooling	
95	<b>Commisioning of CBX purifier (if available)</b>	1day
96	Check HP manifold A and B	
97	Dryer A3400A drying molsieve	
98	Start purifier, adjust controller parameters	
99	<b>Complete cool down and cold commissioning</b>	5days
100	cool down of CBX and test cap <b>Connect to dewar</b>	
101	Check of all sensors and actuators in cold conditions	
102	Adjustment of all parameters	
103	Run installation with different load	
104	<b>End of commissioning/ performance test</b>	
105	Acceptance test	
106	Training of operators	
GMP	Gas management panel	
ORS	Oil removal system	
CBX	Coldbox	
HP	High pressure	
LP	Low pressure	