## Test Protocol Commissioning

(ve-com. after more)

Laser System: OBS 2 H2 => H1

Check all installed System Components:

IL: ODS 2-IL

PSL-PC: PSL

PSI: 100 41 613

PS2: 100 41 608

PS3: 100 41 604

PS4: 100 41 614

TECI: 100 41 60 6

CB: OBS2-CD

FE-DB: OBS2-FE-DI3

LH: ORS 2

## Test after Rack installation:

Switch ON the PSL computer, the fiber switches, the interlock box, the control box and the frontend box.

DBI: OBS 2 - PB1

DB2: GAS 2 - DAZ

DB3: UDS 2 - DD3

DB4: OBS2-BB4

TEC2: 100 41 611

first comm..

re-comm.

First functionality check

Go to Stat > and check Beckhoff-COM (all boxes green)

VISU showing updated values

Safety Logic running

Check key lock switch and emergency stop (IL)

Check key lock switch and emergency stop (CB)

Check laser pushbutton

Safety Interlock checking procedure:

All interlocks must be green before starting this procedure. Make sure that the diode boxes are still short cut protected. Check System Status for Interlock checking by open the individual circuits. To include cabling and connectors open the circuits at the described position.

date: 29-Nov-10 page: I editor: mf



DBI (open on DB side)  DB2 (open on DB side)  DB3 (open on DB side)  DB4 (open on DB side)  DB4 (open on DB side)  Interlock open  DB4 (open on DB side)  FE-DB (open on DB side)  Chiller x-tal (open on chiller side)  Chiller diode (open on chiller side)  TEC (Switch off TEC 1)  TEC (Switch off TEC 2)  External interlock  Safety Switch @ IL  Safety Switch @ IL  Interlock open  Int			first comm	re-comm.
DB3 (open on DB side)  DB4 (open on DB side)  Interlock open  DB4 (open on DB side)  FE-DB (open on DB side)  Chiller x-tal (open on chiller side)  Chiller diode (open on chiller side)  Interlock open  TEC (Switch off TEC 1)  TEC (Switch off TEC 2)  External interlock  Interlock open  Safety Switch @ IL  Safety Switch @ CB  Switch ON all components (this includes running chillers, make sure that the horses are connected properly and check for water leakage) and RESET all errors. After Reset the interlock inputs working properly check the function of the interlock if all critical components will be switched off.  Choose an interlock event and check stopping the system:  first comm re-comm.  NPRO  System stopped  DB-FE  Laser Diodes stopped  Test laser diode control (DB needs to be bridged)  Test laser diode drive by set I A to DB I-4 and readout the current  Test laser diode temperature control for DB I-4  Comments:  Op. Hrs. DD1-4; 485Ch;  SQ, 04, 2012	DB1 (open on DB side)	Interlock open		9
TEC (Switch off TEC I)  TEC (Switch off TEC 2)  Interlock open  Interlock open	DB2 (open on DB side)	Interlock open	Ф	C.
TEC (Switch off TEC I)  TEC (Switch off TEC 2)  Interlock open  Interlock open	DB3 (open on DB side)	Interlock open	Ф	J
TEC (Switch off TEC I)  TEC (Switch off TEC 2)  Interlock open  Interlock open	DB4 (open on DB side)	Interlock open		9
TEC (Switch off TEC I)  TEC (Switch off TEC 2)  Interlock open  Interlock open	FE-DB (open on DB side)	Interlock open	Ф	4
TEC (Switch off TEC I)  TEC (Switch off TEC 2)  Interlock open  Interlock open	Chiller x-tal (open on chiller side)	Interlock open	中	4
TEC (Switch off TEC 2)  External interlock  Safety Switch @ IL  Safety Switch @ IL  Safety Switch @ CB  Switch ON all components (this includes running chillers, make sure that the horses are connected properly and check for water leakage) and RESET all errors. After Reset the interlock relay should be switched ON, ATTENTION this allows Laser operation. If all interlock inputs working properly check the function of the interlock if all critical components will be switched off.  Choose an interlock event and check stopping the system:  First comm. re-comm.  NPRO  System stopped  DB-FE  Laser Diodes stopped  DB-FE  Laser Diodes stopped  Test laser diode control (DB needs to be bridged)  Test laser diode drive by set I A to DB I-4 and readout the current  Test laser diode temperature control for DB I-4  Comments:  Op. Hrs. DB1-4: 485C4: FEBD 5375h.  A: Illa 4265h;  Controller:  Date:  30.04.2C42	Chiller diode (open on chiller side)	Interlock open		4
External interlock Safety Switch @ IL Safety Switch @ IL Safety Switch @ CB  Switch ON all components (this includes running chillers, make sure that the horses are connected properly and check for water leakage) and RESET all errors. After Reset the interlock relay should be switched ON, ATTENTION this allows Laser operation. If all interlock inputs working properly check the function of the interlock if all critical components will be switched off.  Choose an interlock event and check stopping the system:  First comm. re-comm.  NPRO System stopped DB-FE Laser Diodes stopped DB-FE Laser Diodes stopped DB-FE Laser diode control (DB needs to be bridged) Test laser diode drive by set I A to DB I-4 and readout the current Test laser diode temperature control for DB I-4  Comments:  Op. Hrs. DD1-4: 48564:  Date:  Date:  Date:  30, 64, 2642	TEC (Switch off TEC 1)	Interlock open		
Safety Switch @ IL Safety Switch @ CB Interlock open Switch ON all components (this includes running chillers, make sure that the horses are connected properly and check for water leakage) and RESET all errors. After Reset the interlock relay should be switched ON, ATTENTION this allows Laser operation. If all interlock inputs working properly check the function of the interlock if all critical components will be switched off.  Choose an interlock event and check stopping the system:  NPRO System stopped DB-FE Laser Diodes stopped PS1-4 Power Supply Stopped Test laser diode control (DB needs to be bridged) Test laser diode drive by set   A to DB   -4 and readout the current Test laser diode temperature control for DB   1-4  Comments:  Op. Hrs. DD1-4: 48504. FEDD 5375h.  A: Ill. 42654;  Controller: Date:  Date:  30.04.2042	TEC (Switch off TEC 2)	Interlock open		
Safety Switch @ CB Interlock open	External interlock	Interlock open		
Switch ON all components (this includes running chillers, make sure that the horses are connected properly and check for water leakage) and RESET all errors. After Reset the interlock relay should be switched ON, ATTENTION this allows Laser operation. If all interlock inputs working properly check the function of the interlock if all critical components will be switched off.  Choose an interlock event and check stopping the system:    First comm. re-comm.	Safety Switch @ IL	Interlock open	口	4
connected properly and check for water leakage) and RESET all errors. After Reset the interlock relay should be switched ON, ATTENTION this allows Laser operation. If all interlock inputs working properly check the function of the interlock if all critical components will be switched off.  Choose an interlock event and check stopping the system:  First comm re-comm.  NPRO  System stopped  DB-FE  Laser Diodes stopped  PSI-4  Power Supply Stopped  Test laser diode control (DB needs to be bridged)  Test laser diode drive by set   A to DB   -4 and readout the current  Test laser diode temperature control for DB   -4  Comments:  Op. Hrs. DD1-4: 485C4: FEDD 5375h.  (1:1(u 4265h;  Controller: Date:  30.04.2C42	Safety Switch @ CB	Interlock open		-
first comm re-comm.  NPRO  System stopped  DB-FE  Laser Diodes stopped  PSI-4  Power Supply Stopped  Test laser diode control (DB needs to be bridged)  Test laser diode drive by set I A to DB I-4 and readout the current  Test laser diode temperature control for DB I-4  Comments:  Op. Hrs. DDI-4: 485Ch: FE-Did 5375h.  (1:11a 4265h:  Date:  30.04, 2C12	connected properly and check for vinterlock relay should be switched interlock inputs working properly of	water leakage) and RES ON, ATTENTION this	ET all errors. allows Laser	After Reset the operation. If all
NPRO  System stopped  DB-FE  Laser Diodes stopped  PSI-4  Power Supply Stopped  Test laser diode control (DB needs to be bridged)  Test laser diode drive by set   A to DB   -4 and readout the current  Test laser diode temperature control for DB   -4  Comments:  Op. Hrs. DD1-4: 485Ch: FEDD 5375h.  (A:Ille: 4265h;  Date:  30.04.2C12	Choose an interlock event and chec			
DB-FE  PSI-4  Power Supply Stopped  Test laser diode control (DB needs to be bridged)  Test laser diode drive by set I A to DB I-4 and readout the current  Test laser diode temperature control for DB I-4  Comments:  Op. Hrs. DD1-4: 485C4: FEDD 53754.  (Notice 42654:  Date:  30. 04. 2042	NPRO Sv		first comm	re-comm.
PSI-4 Power Supply Stopped  Test laser diode control (DB needs to be bridged)  Test laser diode drive by set I A to DB I-4 and readout the current  Test laser diode temperature control for DB I-4  Comments:  Op. Hrs. DDI-4: 485Ch: FEDD 5375h.  (Nille: 4265h;  Date:  30.04.2C12	· ·		4	
Test laser diode control (DB needs to be bridged)  Test laser diode drive by set I A to DB I-4 and readout the current  Test laser diode temperature control for DB I-4  Comments:  Op. Hrs. DD1-4 : 485C4 : FEDD 5375h :  (1:/(u + 4265h):  Date:  30, 04, 9C42		• •	4	<u> </u>
Test laser diode drive by set I A to DB I-4 and readout the current Test laser diode temperature control for DB I-4  Comments:  Op. Hrs. DD1-4; 485Ch: FEDD 5375h.  Chiller 4265h;  Controller: Date:  30, 04, 2012	PSI-4 Pc	ower Supply Stopped	1	
Op. Hrs. DD1-4; 48504. FEDD 53754.  (Niller 42654;  Controller: Date:  30.04.2012	Test laser diode drive by set I A to	DB I-4 and readout the	e current	
Controller: Date: 30.04.2012		al Erno c	-3906	
mt 30.04. 2012	Chiller 4265h;	72013	3 13 1 1	
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## **Test Protocol Laser-Head**

	first comm	re-comm.
Frontend	1	
Lid Functionality		4
Lid Override		V
Check Frontend water flow sensors	4	
Oscillator		
Lid Functionality		
Lid Override	Ф	CV.
Check water flow sensors laser head		400
Check water flow power meter	ф	400
LRA functionality test		
LRA range warning	Ф	U
Check Externer Shutter functionality		
Check Interner Shutter functionality		
Temperatursensors		Way.
Temp-/ Humidity		4
Fiber switch (checked with test tool first)		<del></del> ,
Fiber switch (checked with switch)		y
PD Power distribution		4
Power Meter I-3 functionality		4
Photo Diode functionality		
Fieldbox interface	Į d	4
Comments:		_
Controller: D	ate:	
m t	01.05.12	
Prepare for shipping		
Measure diode slopes and compare to first	measurement	
(values needs to be in +1-5% range)	• • • • • • • • • • • • • • • • • • • •	
Check is diodes are shorted		Ï
Empty water circuit		

First Commissioning:		
Comments:		
Controller:	Date:	
RE-commissioning:		
Comments:		
Controller:	Date:	