

Target Module Connection and Disconnection Procedure		
Document-141576	Release No. 2	Release Date: 2018-02-21

6 Module Connection Checklist

SEQ	ITEM	NOTE	CHECK
Safety	Acknowledge and Activate Work Permit	Call RIB operators (ext. 7500) Call Main Control Room if disconnecting or closing water supply/return in SEQ 0 (ext. 7333)	✓
Safety	<ul style="list-style-type: none"> • Electronic dosimeter • Tank Suit • Respirator • Overshoes • Gloves(double) • Safety Glasses / Full Face Respirator 	Remove and replace overshoes when exiting the pit to reduce risk of spreading contamination.	✓ ✓ ✓ ✓ ✓ ✓ ✓
Safety	Check the General Field of ITW/ ITE	RAM or pole monitor ($\leq 500 \mu\text{Sv/h}$) ¹	160 $\mu\text{Sv/h}$ ✓
Prep	Check tools: <ul style="list-style-type: none"> • Hex Keys (9/16", 3/16" & 3/8") • Side Cutter • Wrenches (two 1/2") • Wipes • 10" Cable Ties • RAM 		✓ ✓ ✓ ✓ ✓
0	High Active Cooling Water	<ul style="list-style-type: none"> • Verify valve for supply water closed • Verify valve for return water closed 	✓ ✓
1	Shutter	<ul style="list-style-type: none"> • Cut cable tie • Push down bellow (air cylinder) 	✓ ✓
2	Compressed Air to Shutter and Valves (x2)	Shutter should be opened (pushed down)	✓
3	Gas Line (5/8" & 11/16")	FEBIAD target only Two manual valves are opened	N/A
4	ITW/ITE Roughing out	Ask ISAC operator roughing out ITW/ITE	✓
5	High Current Cables: <ul style="list-style-type: none"> a) (A)Target Oven + ✓ b) (B)Target Oven - ✓ c) (C)Tube heater - ✓ d) (D)Tube Heater + ✓ e) (T)60KV Bias ✓ f) (PQ)Coil + N/A g) (RU)Coil - N/A 	f) FEBIAD target only g) FEBIAD target only not done yet!!!	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
6	Extraction Electrode (I)		✓
7	Einzel Lens (Y)	Einzel lens cable should be routed as far away from all 60 kV corona rings as possible	✓



¹ Ref Dose Estimate Form Document-19905

8	52 Pin Connector (H)	Ground to bias stand	
9	<p>a) Water Lines</p> <ol style="list-style-type: none"> 1. Target Oven 2. Tube Heater 3. MSP 4. EE 5. HS 6. Window 7. Coil 2 8. Coil 1 (ITE only) <p>b) Open water (after step a)</p> <p>c) No Drip Leaks on Quick Connector (QC)</p> <p>d) No contact between SST Elbows and QC</p>	<p>a) Water Lines</p> <ol style="list-style-type: none"> 1. With bypass loop between Ta+ and Ta- on module 2. With bypass loop between Tu+ and Tu- on module 3. Bypassed (looped) on station. Cable tie to station. 4. Connected to module always <p>b) Open supply and return valves</p> <ol style="list-style-type: none"> 1. Hand check, wipe away water if necessary 2. SST elbows and quick connectors must be clear of each other, otherwise an electrical short will be produced. 	
10	<p>Vacuum System</p> <ol style="list-style-type: none"> a) TP1 Controller b) TP2 Controller c) TP1 BV1 d) TP2 BV2 e) IG1 f) PNG4 (TM4 only) g) TP1 TP2 Fans 	<ol style="list-style-type: none"> a) Connector on pump body b) Connector on pump body c) KF 25 and O-ring , Connector for BV 24 V DC d) KF 25 and O-ring , Connector for BV 24 V DC e) Align the gauge pins f) Beside the shutter, use PNG1 cable g) Attach and switch on all fans (2 of 110 V Plugs for ITW, switch on Extension bar for ITE) 	
11	<p><u>Steers</u> ITE:</p> <ul style="list-style-type: none"> • Left, top • Bottom (Right) <p>ITW:</p> <ul style="list-style-type: none"> • X • Y • Common 	<p>3 HV connectors</p>	
12	ISAC Control Page set up (plug, connector)	<u>Surface</u> with <u>BNZEL LENS</u> , IGLIS, and FEBIAD	
13	TP1 TP2 Controllers Reset	Electrical room, TP1 and TP2 controllers	

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14	<p>Water Signals Check</p> <p>a) Target Module:</p> <ol style="list-style-type: none"> Target ✓ Tube ✓ MSP ✓ HS ✓ EE ✓ Coil (1) ✓ Coil 2(ITE only) ✓ Module Window ✓ <p>b) Beamline 2A:</p> <ol style="list-style-type: none"> Tank ✓ Dump(Plug) ✓ Dump Shielding ✓ 2A Window ✓ Collimator ✓ 	<p>In Electrical room, water signal panels:</p> <p>Yellow lights should flick at certain frequency and green lights should be constantly on</p> <p>*If signal is not right, go back to pit and visually check wheel spin in flow sensor for trouble shooting</p> <p>TM2 and TM4 GE line are not in use (leak), No signal</p>	OK
15	Double Check Module Connection	General, visually check all connections Verify voltage gaps free of cables and waterlines	✓
16	HV Fence and HV Cover on TM Service Cap	Limit switches and cables Retract HV Keys	✓
17	Restore HV Keys to Electrical Room	Limit switches signals check in electrical room	
18	Start TP1 TP2	ITW/ITE: CG4/CG4S below 200 mTorr (ask ISAC OP)	✓
19	All Turbo Pumps(six) Current Draw Check at Normal Status	Check current draw for each pump on TP controller, current draw at full speed (38kRPM) ≤ 2.0 A Visually confirm TPBVs in pit are opened (red button sticks out)	✓
20	Return Work Permit and E-log entry	Call RIB operators (ext. 7500) Call Main Control Room (ext. 7333)	✓

NOTES:

TARGET: UK 22
 TARGET MODULE: TM1 TM2 TM3 TM4
 STATION: ITW ITE
 SIGNATURE 1: 
 SIGNATURE 2: 

DATE: 2018-06-07/08

DOSE 1: 807 mSv 0.370 + 0.010
 DOSE 2: 849 mSv 0.352 + 0.006