

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) ✓	OK
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.	OK
Safety	Check the General Field of ITW/ ITE	RAM or pole monitor ($\leq 500 \mu\text{Sv/h}$) ¹	
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 ✓ 		OK
0	High Active Cooling Water ✓	<ul style="list-style-type: none"> • Verify valve for supply water closed • Verify valve for return water closed 	OK
1	Shutter ✓	<ul style="list-style-type: none"> • Cut cable tie • Push down bellow (air cylinder) 	OK
2	Compressed Air to Shutter and Valves (x2) ✓	Shutter should be opened (pushed down) ✓	OK N/A
3	Gas Line (5/8" & 11/16")	FEBIAD target only Two manual valves are opened	
4	ITW/ITE Roughing out ✓	Ask ISAC operator roughing out ITW/ITE	OK
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 + g) (RU)Coil - 	f) FEBIAD target only g) FEBIAD target only	OK
6	Extraction Electrode (I) ✓		OK
7	Einzel Lens (Y) ✓	Einzel lens cable should be routed as far away from all 60 kV corona rings as possible	OK

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. 	OK
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 ✓ <p>✓ 7. Switch on Fans ✓</p>	<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) 	OK
11	<p>Steers</p> <p>ITE:</p> <ul style="list-style-type: none"> • Left, top ✓ • Bottom (Right) ✓ <p>ITW:</p> <ul style="list-style-type: none"> • X • Y • Common 	3 HV connectors	OK
12	ISAC Control Page set up (plug, connector) ✓	Surface with EINZEL LENS, IGLIS, and FEBIAD	OK
13	TP1 TP2 Controllers Reset ✓	Electrical room, TP1 and TP2 controllers	OK

14	<p>Water Signals Check</p> <p>a) Target Module:</p> <ol style="list-style-type: none"> 1. Target, ✓ 2. Tube, ✓ 3. MSP ✓ 4. HS ✓ 5. EE ✓ 6. Coil (1) ✓ 7. Coil 2(ITE only) ✓ 8. Module Window ✓ <p>b) Beamline 2A:</p> <ol style="list-style-type: none"> 1. Tank ✓ 2. Dump(Plug) ✓ 3. Dump Shielding ✓ 4. 2A Window ✓ 5. 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	OK
16	HV Fence and HV Cover on TM Service Cap ✓	Limit switches and cables Retract HV Keys	OK
17	Restore HV Keys to Electrical Room ✓	Limit switches signals check in electrical room ✓	OK
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	OK
20	Return Work Permit and E-log entry	Call RIB operators (ext. 7500) Call Main Control Room (ext. 7333)	OK

NOTES:

TARGET: Ta# 56

TARGET MODULE: TM1 TM2 TM3 TM4

STATION: ITW ITE

SIGNATURE 1: *[Signature]* 807#

SIGNATURE 2: *[Signature]* #853

DATE: 2018-10-09

DOSE 1: ~~0.227~~ mSv

DOSE 2: 0.113 mSv