	MAINTENANCE TRACKING TOOL **PETTRACE800**	Date:2024-03-04

Country: Italy	**Site:** VEN
Intervention:	Programmed maintenance: UBM/CBM ☑
Subsystems:	

PRE-MAINTENANCE

Registration Date: 2024-03-04
Gas flow(sccm):

TPG Settings Verifications

	Low limit (x10-)	High limit (x10-)
Piranni 1 (TPG300 A1):	-	
Piranni 2 (TPG300 A2):	-	-
Penning:	-	-

Notes

Gauge number	Pressure (x10-) without gas	Pressure (x10-) with gas
A1 (mbar):	-	-
A2 Under Range:	☑	☑
A2:	-	-
B1 (mbar):	-	-

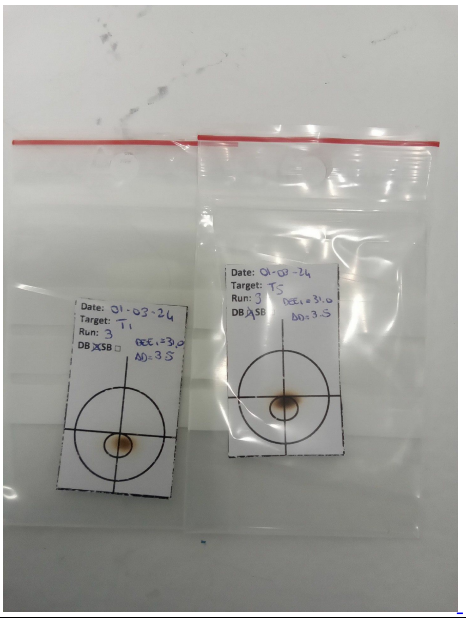
System software

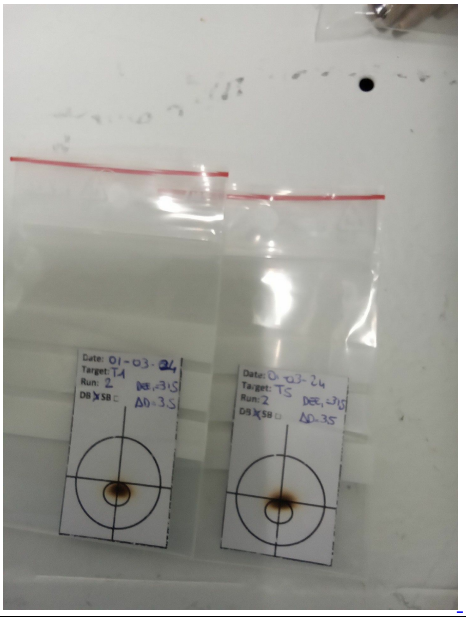
Subsytem	Version
Master:	
ACS:	
Service System:	
Manager:	
Informix (only applicable to SUN-Master Station):	

Comments

Paper burn done on friday

Paper Burn Before PM

Paper burn


Pburn


VACUUM

Diffusion pump & HVV timing

TimeInto	HeatingTime	PumpingTimeBeforeOpenHVV (Min)	TimeToOpenHVV
Pump		13.0	

RP & DP pump oil condition

Date last rotary oil change: 2024-03-04

Roughing pump oil mist filter cleaned	Roughing pump oil is in good color and condition
☑	☑

Last DP maintenance: 2021-03-04

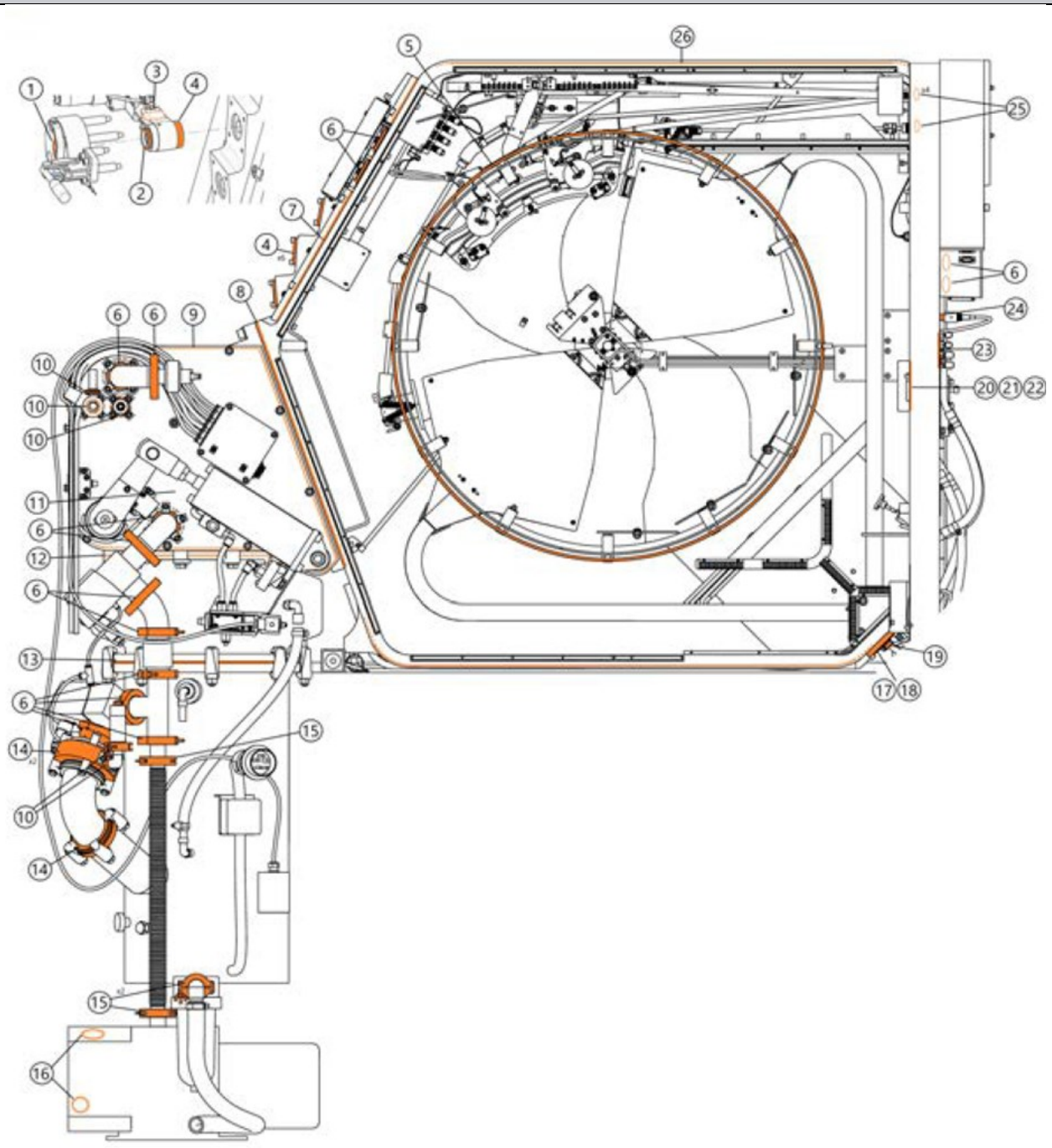
DP oil is in good color and condition	☑

RP Photo


DP Photos
Photo DP

Notes

PETtrace800 O-Rings analysis

Pins


CHAMBER

Chamber Opening

Measure yoke play, adjust if needed: -

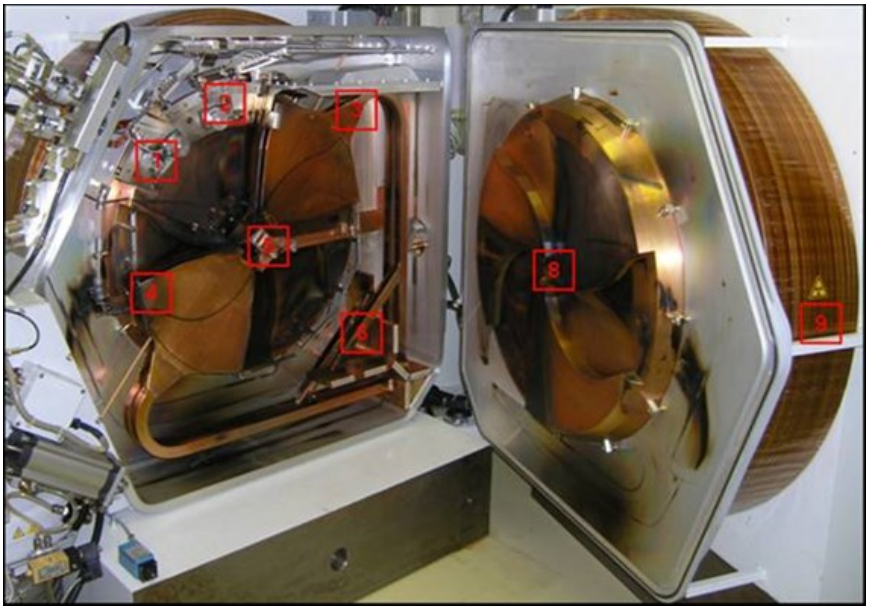
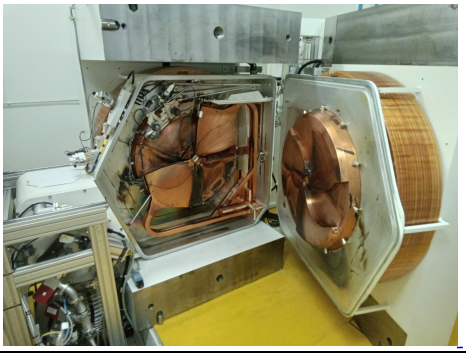
Dose rate mapping (positions 1-9, [µSv/h])	
	
Position 1: At 36 cm from Extraction trolley	-
Position 2: At 36 cm from Carousel	-
Position 3: At 36 cm from Dee 2-stem junction	-
Position 4: At 36 cm from Deel upper corner	-
Position 5: At 36 cm from Central region	-
Position 6: At 36 cm from Stems coupler	-
Position 7: At contact with central region	-
Position 8: At 36 cm from magnet pole	-
Position 9: At contact of magnet coil	-

Photo documentation & visual inspection

Vacuum chamber


Beam exit valve tests

Visual inspection of tubing	☑
Visual inspection of opening/closing	☑

Flaps

Flap 1

Calibrate flaps, record minimum and maximum motor current:

Minimum current [mA]	113
MaximumCurrentMA	121

Record flap to dee distances for 0%, 50%, 100%

0% value [mm]	4.4
50% value [mm]	-
100% value [mm]	-

Notes

Flap 2

Calibrate flaps, record minimum and maximum motor current:

Minimum current [mA]	69
MaximumCurrentMA	89

Record flap to dee distances for 0%, 50%, 100%

0% value [mm]	4.27
50% value [mm]	-
100% value [mm]	-

Notes

Central Region

Visual inspection of flip-in probe	☑

Measure flip-in probe position (a,b,c,d,e)

;

A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
-	-	-	-	-

Dismount ion source and mount dummy ion source	☑

Measure central region distances (A, B, C, D) [mm]

A [mm]	B [mm]	C [mm]	D [mm]
0.95	0.2	0.3	0.95

Visual inspection and photo of H-puller	☑
If needed: H-puller replacement	

If needed: Adjustment of central region and record A, B, C, D again

If needed: Adjustment of central region and record A, B, C, D again		☑	
A [mm]	B [mm]	C [mm]	D [mm]
1.05	0.55	0.3	0.95

If needed: Ion source maintenance or replacement	☑
Install back ion source	☑

Restore and record flip-in probe position

Restore and record flip-in probe position			
A [mm]	B [mm]	C [mm]	D [mm]
0.95	0.2	0.3	0.95

Pictures	
Image	**Comments**
CentralRegion_2.jpg	
CentralRegion_3.jpg	
CentralRegion_4.jpg	
CentralRegion_5.jpg	Dummy anode
CentralRegion_6.jpg	

Dees

Visual inspection of dees, internal and external baffles	

	Measure dee thickness	Measure dee height
A	**33.19**	**46.74**
B	**33.32**	**75.3**
C	**33.97**	**47.67**
D	**33.3**	**47.59**
E	**33.09**	**75.35**
F	**34.5**	**46.74**
G	**34.5**	**74.14**
H	**34.19**	**75.01**

Pictures	
Image	**Comments**

Verify tightness of dee- and stem screws	

Extraction

Replace extraction foils of carousels	☑
Visual inspection of extraction cables	☑

Calibrate balance, record minimum and maximum motor current [mA]

	Calibrate balance, record minimum and maximum motor current	Calibrate extraction 1, record minimum and maximum motor current [mA]	Calibrate extraction 2, record minimum and maximum motor current [mA]
Minimum current [mA]	117	96	116
Maximum current [mA]	138	107	121

Diagnostic system checks

Target ID	
Visual inspection of collimators and collimator cables	☑
Check collimator screws tightness	☑
Measure flip-in probe resistance	**29.45**
Target Resistance	**20.45**
Lower Collimator Resistance	**29.43**
Upper Collimator Resistance	**29.45**
Horizontal Collimator Opening	**-**
VerticalCollimatorOpening	**-**

	Resistance Measurement	Insulation Measurement
Extraction 1	29.43	29.5
Extraction 2	29.5	-

Comments	

Chamber Clean-up

Carousel repositioning

Install back carousels	☑
Foil change test on each carousel	☑
Reset foil counter	☑

Cabinets

Swedwater

Inspect cooling water system for leaks	Bunker water manifold,Magnet coil water connections,Water connections to vacuum chamber,Target water manifold
If needed inspection of cooling water filters	

Record of water cooling system performance

Record expansion vessel pressure BP1 [bar]	-
Record water level [mm]. Adjust if needed	-
Record main pump pressure BP2 [bar]	-
Record system temperature BT1 [°C]	-
Record temperature alarm setting [°C]	-
Record cooling water out temperature T2 [°C]	-
Record cooling water in temperature BT3 [°C]	-
Record deionizer flow BF10 [l/min]	-
Record conductivity BQ1[(µS/cm]	-
Replace deionizer vessel if needed	

Ion Source

Record H2 gas pressure

Set point [SCCM]	Reading at MFC [bar]
-	-

Turn on Magnet, set probe in, turn on RF, turn on gas.

Magnet current [A]	DEE1 voltage [kV]	DEE2 voltage [kV]	Gas flow [sccm]	If ion source was maintained, perform ion source conditioning (ramp up from 30 mA to 100 mA in 30 minutes and from 100mA to 200mA in 10 minutes)
431	31.5	35	5	☑

Record Ion Source Performance

IS current [mA]	IS voltage [V]	Flip in probe current [µA]
20	1150	3
30	1230	9.1
40	1305	18.4
60	1343	32
70	1316	75
80	1265	100
90	1200	125
100	1146	152
110	1063	187
120	1012	215
130	969	240

Paper Burn Test

Install paper burn target	☑
Perform paper burn test in SB and DB	

Install paper burn target
Image_7.jpg

If needed, adjust collimators and repeat	

LTF

Identifier	LTF4
LTF	Install back targets
Inspect the movement of all LTF compressed air actuators	

Starting pressure [psi]	Pressure drop [psi / h]
73.2	1

If needed: Perform target fill tests and adjustment for each target	-
If needed, adjust and repeat test, record adjustment value	-

Pictures	
Image	Comments

Beam Conditioning

Photo name	Add Comment
Image_2.jpg	No comments

PMDebriefing

Record additional tasks performed not recorded elsewhere	Record open tasks and issues	Record spare parts / consumables to be ordered	Record worker dosimetry	
			Name	Total Dose [uSv]
				31