

EUROfusion PSD Management Meeting

# WPSA report 2024-12-17

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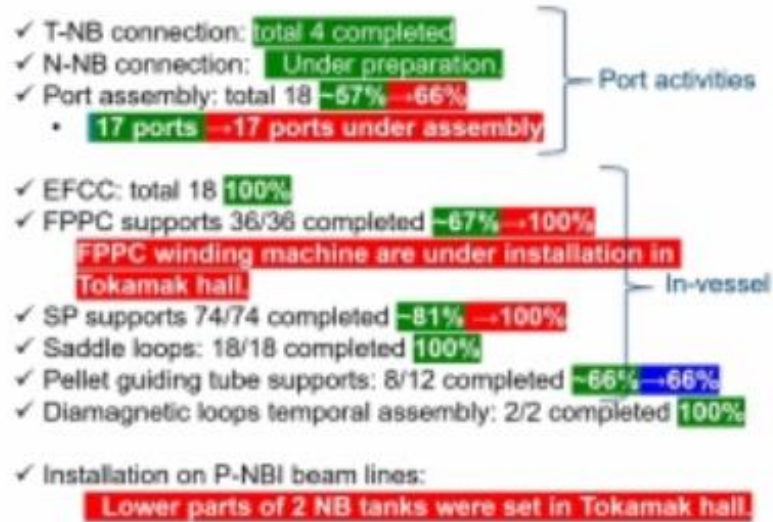


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# JT-60SA news: ME1 activities status



- ME1 shutdown advancing well (see summary status)
- EU subsystems projects
  - Thomson Scattering installation confirmed for Nov 2025. Solution for issues in the final acceptance (sealing test and window cleaning) being agreed between QST and F4E. EC restrictions towards Russian companies impacting again: cancellation of visit for TS laser maintenance.
  - VUV installation April 2026
  - TPCI: laser path finally agreed (16 Dec). Final DRM planned for February, followed by signature of the Procurement agreement. EU proposed installation in ME1 still not decided
  - PLS. Pelin supply now most likely to a dead end (contractual issue but also technical failure). Tender for a framework contract for a new source to be developed in EU being issued by F4E.
  - MGI did not pass the on-site leaking test -already passed in EU before delivery- due to the modification of the original design (helicoflex instead of viton seal). Solution planned via minor mechanical modification.
- Computer and data access
  - Integration of present Naka server to the IFERC network for facilitated access and use foreseen for July 2025. After testing, it would be available for the users.
  - Final specifications for the new data server being prepared. Contract assignation foreseen for summer 2025 and starting of server operation (under IFERC) in spring 2026
  - Use of individual laptop for direct connection (when on site) being considered, together with the extension to Naka of the IFERC guest network

## Cryogenic system

- VLP (to reduce saturation vapor pressure in 3.7K liquid helium bath for cryopump) operation
  - worked without problem.
- Cold circulator operation test in modified communication bus signal between PLC and magnetic bearing motor controller.
  - no rotation speed fluctuation.



# Coils insulation reinforcement

## Completion of EF1 insulation reinforcement

- Helium inlet : 12 locations
- Pancake joint : 11 joints
- Terminal conductor extraction from winding: 1 location
- Duration : May ~ December 2024
- Paschen test at +7kV: all passed.



## Summary of PF Voltage in Op-2 (05-Dec-2024)

Coil	Absolute Max Voltage to GND (for coil insulation)	Operating Voltage (Booster PS / SNU)		Max Current		QPC	Varistor Max Clamping Voltage = 1.2 x Peak operating voltage (*2)
		Nominal (excl. ripples)	Peak (incl. ripples) = Nominal + 0.5 kV	Base PS + SNU (min R1 = 0.25 Ohm)	Base PS		
CS	4 kV (case 1) (*1)	2.8 kV	3.3 kV	+11/-20 kA	+/-20 kA	2.53 kV (CS1/4)	<4 kV
	3 kV (case 2) (*1)	2.0 kV	2.5 kV	+8/-20 kA		2.71 kV (CS2/3)	(<3 kV) (*3)
EF3/4	5 kV	3.5 kV	4.0 kV	+14/-20 kA	+10/-20 kA	3.8 kV	<5 kV
EF1/2/5/6							

(\*1) Depending on coil reinforcement => Necessary to prepare the varistors for both cases

(\*2) Referring to EF6 test result (max 6.6 kV at 5.0 kV operation) for 2S2P configuration of Metrosil varistors

(\*3) Minimum value not to clamp CS2/3 QPC voltage (2.71 kV)

- EF1 completed
- Paschen test at 7kV passed in all locations
- Other EFs now being worked on
- CS: JA test process completed, specifications for the subcontract being prepared. F4E completing its analysis on alternative technique
- Likely, reinforcement without uplifting the CS will be decided
- Operation voltage for OP2 scenarios set, with adaptation of the safety circuit (varistors and QPC)
- Objective of nominal EF current (20kA) set for March 2027 (during OP2)
- NO limitation foreseen in the machine performance



## Some output from recent meetings (TCM-42 and WPSA PM\*)

- Revision of OP2 and OP3 (for next ME2) diagnostics to be held soon in 2025 (including decision for TPCI and FILD)
- Neutron spectrometry: TOFOR installation deemed unfeasible due to the technical obstacles (insufficient space at a suitable location). Alternative proposal being put forward for a scintillators–based Neutron+Gamma system aiming to produce first measurements in OP3 and further upgrade for OP4.
- Experiment team coordination meeting (with invitation of EU experts) announced for 19-21 February 2025 in Naka
- \*Lot of information useful for the EU scientific community interested in JT-60SA. Diffusion being agreed (WPSA talk to WPTE TF meeting early next year?). Presentations available at [indico link](#)



# JT-60SA time plan under BA approval

Scope=>

OP1 + OP2

Essential for operation and first group of experiments

OP3 + OP4

Fast ions and energetic particles (confinement / transport / turbulence)

## ENHANCEMENTS

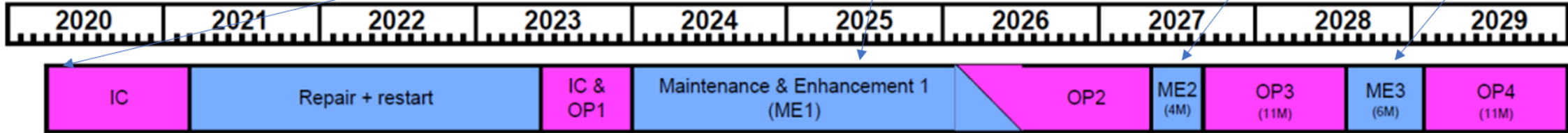
Diagnostic systems

EDICAM

VUV, TS, (TPCI)

FILD, Gamma Sp, CLYC Neut. Sp.

Doppler Refl. LaBr3(Ce) Neut. Sp



Operational systems

- Div. Cryop.
- MGI

PLS

W-wall

## OPERATIONS

Cryomagnet system analysis

Commissioning

- Div. Cryop.
- Remote Participation and Data access

Commissioning

- MGI
- VUV Div.
- TS
- (TPCI)

W transition plan (Oct 25, IPT)

## CODE MANAGEMENT

Development and Training on Simulation Workflows and operational tools

Synthetic diagnostics