

# PIP-II TECHNICAL WORKSHOP

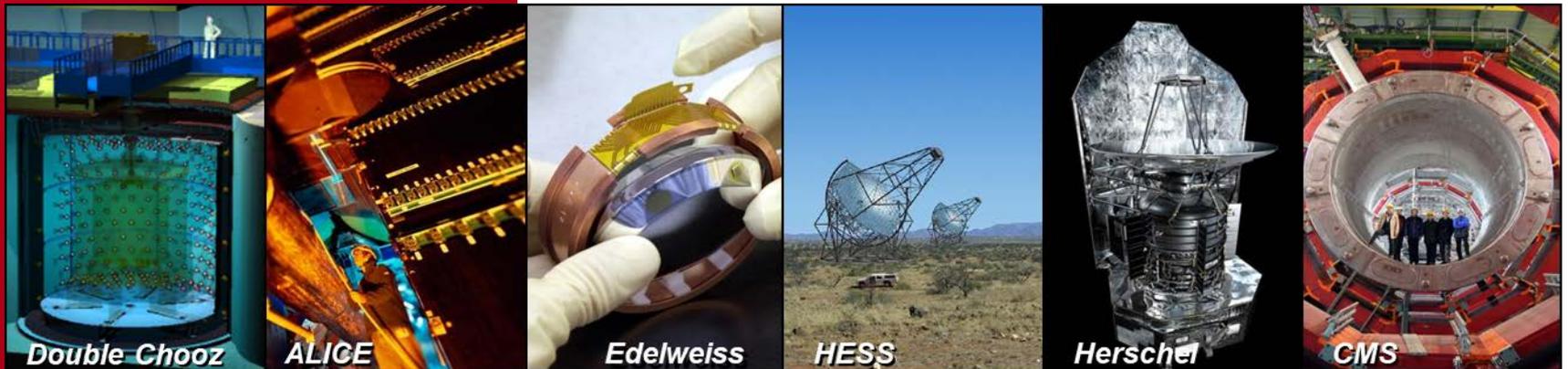
DE LA RECHERCHE À L'INDUSTRIE



## CAVITY MANUFACTURING WG

### 01-04 DEC20

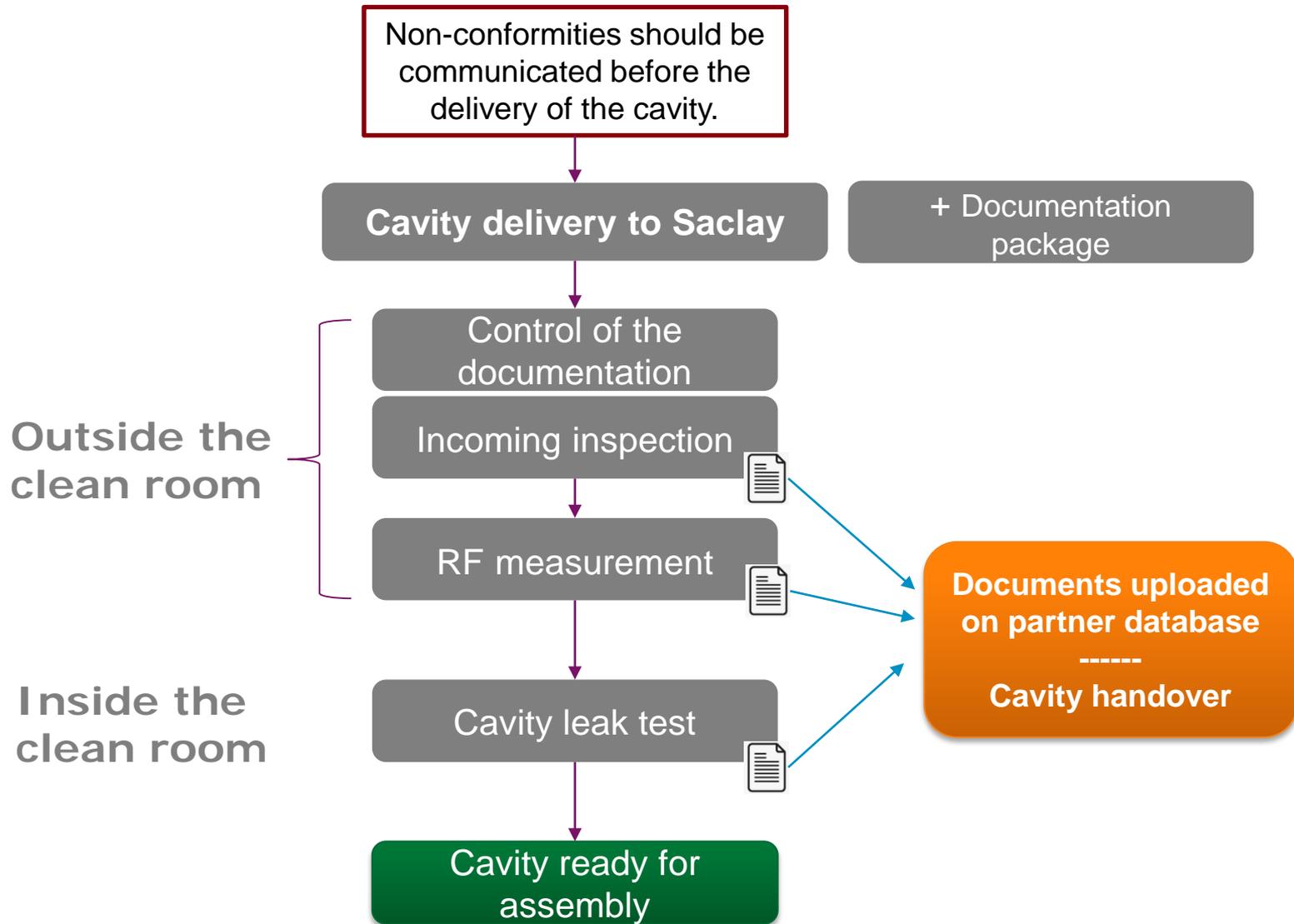
### Topic 5- Quality Control of Cavity Production



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*Déchiffrer les rayons de l'Univers*

Christelle Cloue



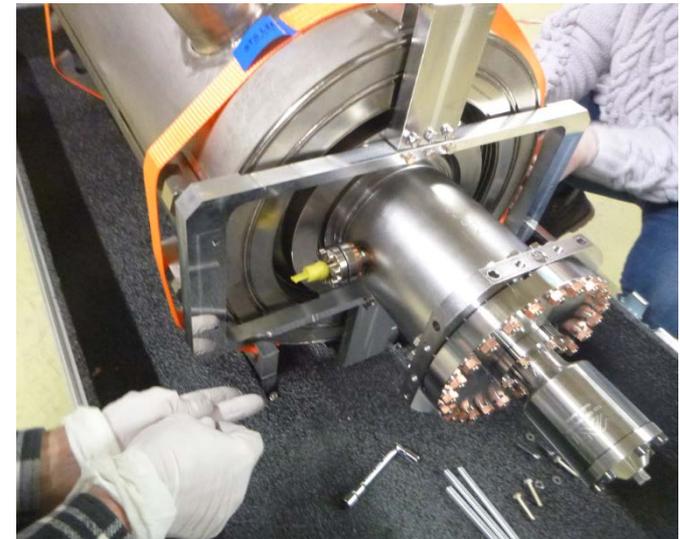
- **Outgoing inspection report** – inspection of the cavity after test operations, before shipment to Saclay
- **Mechanical report for cavity alignment** (cavity geometry reference frame), according to the interface requirements format file to be defined with the provider
- **RF reports** (reference measurements under vacuum, @ room temperature) – format file to be defined with the provider
- **Leak tests and Residual gas analysis reports** according to the requirements
- **Parts in circulation list**
- **Non-conformities** having an impact on interfaces during assembly or having consequences on performances

- **External inspection of the box**

Inspection of the outside of the box and the fasteners for obvious mechanical damages, e.g. cracks, dents or scratches

- **Internal inspection of the box**

- Shock loggers status and readout
- Check if there are any obvious damages or irregularities



- **Cavity visual inspection**

- Inspection of the outside of the cavity for physical damages, presence of external contamination
- Check the cavity from mechanical point of view, if there are any irregularities according to the specifications (interface drawings)

Example : control the position of the tuner blocks with a dummy tuner

## RF measurements, cavity under vacuum

- Measurement of the cavity fundamental mode spectra, and transmission mode and Q of the fundamental mode
- Comparison with the measurements performed just before delivery after the vertical test



## Cavity leak test

- vacuum pressure, leak rate

Leak Check Report: Cavity (into ISO4)		
Template: Leak check cavity before coupler assembly		
<b>1 General Information</b>		
Team Folder	1 - STR	
Manufacturer Name	Commissariat A l'energie atomique	
Location	COU - Coupler-Cavity assembly in ISO 4	
Document Type: Leak Test		
<b>2 Part Information</b>		
Part	Part Name (Part Type)	Quantity
Component 1	3.1.0.0.0.0.0 Cavity M-Bias	(Lot 3)
<b>3 Validation by Technician &amp; Integration Manager</b>		
Name	Technician	Integration Manager
	BOULCH C / BOUYGUES A	BERRY S
Date	01/02/17	01/02/17
<b>Operation Sequence</b>		
Reference	Action	Validation
1	Reference du cryomodule:	CM M-ECCTD
2	Numero de serie de la cavite	CAV007 P01
3	Heure du debut du test	13.03
4	N° de groupe de pompage:	PTM
5	Methode de detection:	Localise au jet d'He
6	Bruit de fond du detecteur sur lui-meme:	4,70E-11 mbar.Ls <sup>-1</sup>
7	Resultat du test de fuite de la connexion cavite - bombac:	OK
8	Valeur de pression avant d'ouvrir la vanne:	6,00E-07 mbar
9	Valeur au pic de pression & fermeture de la vanne:	8,50E-06 mbar
10	Taux de fuite de la cavite:	3,00E-10 mbar.Ls <sup>-1</sup>
11	Zone de fuite non-conforme:	
12	Fin du test	01/02/17 13.17