

COMMUNITY AEROSOL INLET

J.-L. Brenguier, L. Gomes, T. Bourriane
CNRM/GMEI

With the support of SAFIRE
R. Caillou, A. Gribkoff, P. Nacass
and LaMP

P. Laj, P. Villani, D. Piccard

Fabricated by COMAT



Characteristics

TURBULENCE:

Controlled alignment (0.2°)

Shroud

Real-time control of isokinetic flow

Elliptic lips

3.5° diffuser

Polished stainless steel tubes

INERTIAL LOSSES:

600 mm curvature radius

GRAVITATIONAL LOSSES:

3 m/s air speed after diffuser

Direct connection to the aerosol rack

ADDITIONAL LOSSES:

Electric continuity

Temperature control

OVERALL VIEW

Pitot tube

Inlet head

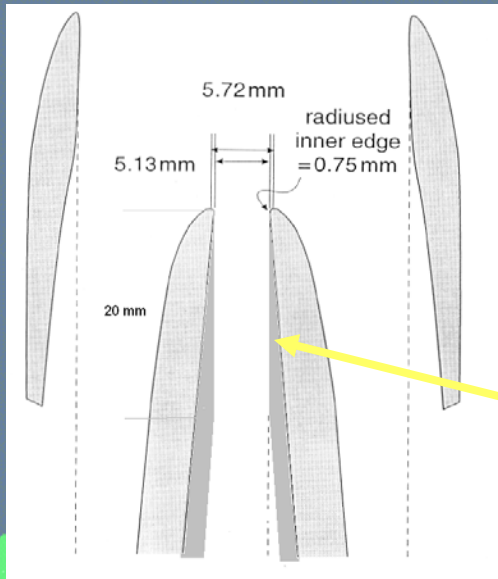
Aircraft window

Alignment actuators

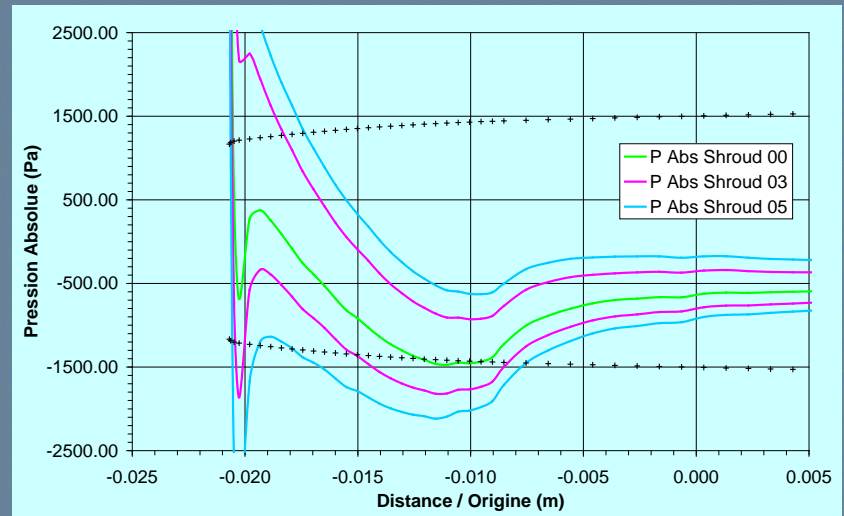
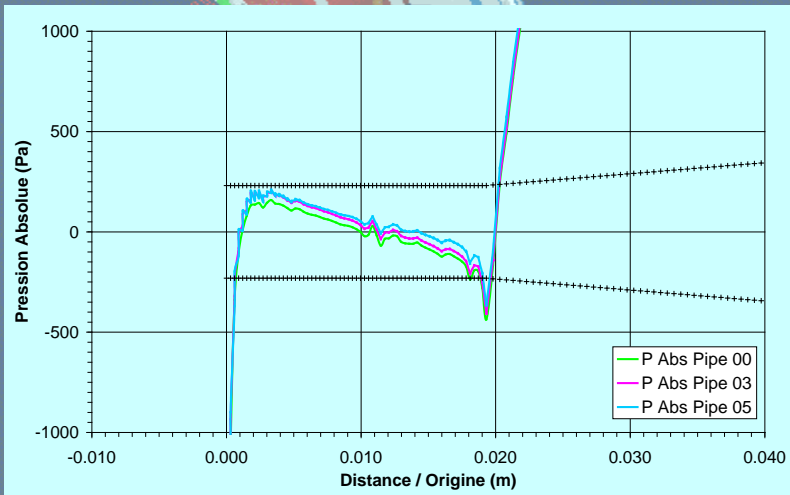
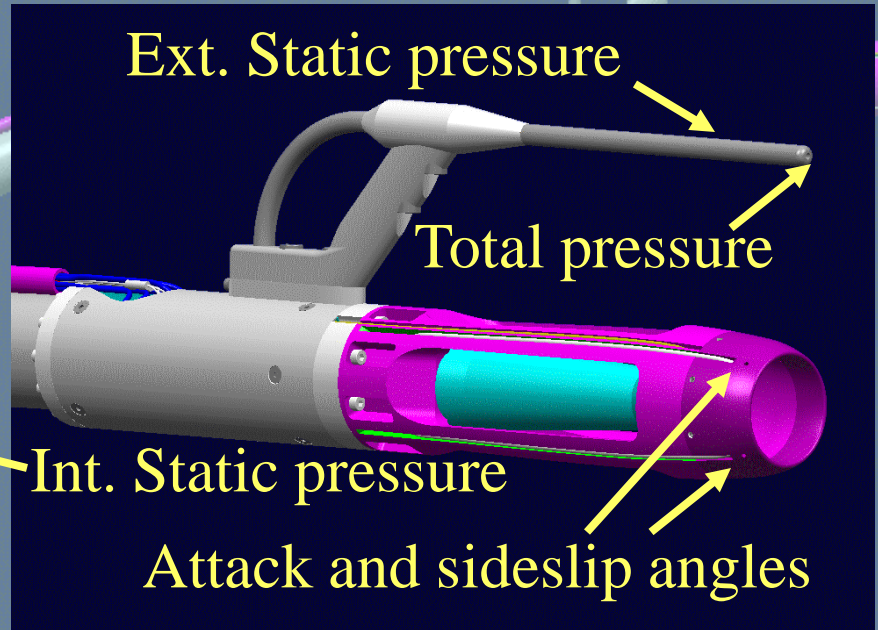
Safety brake

External mass:
3,2 kg,
Internal mass:
7,35 kg
Center of mass :
12,8 cm inside

INLET HEAD

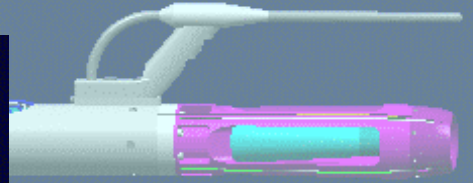
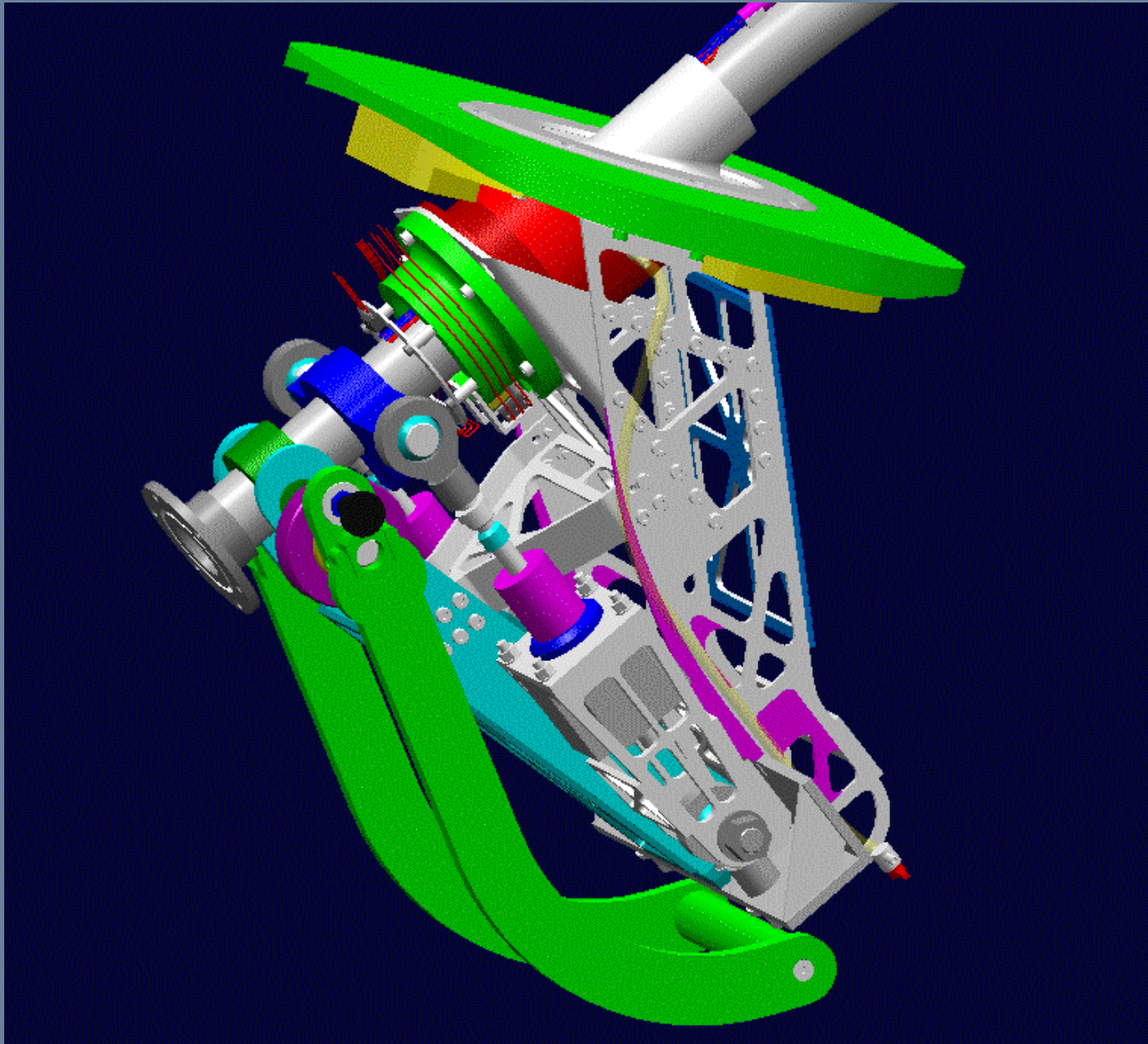


(A. Clark, U. Hawaii)



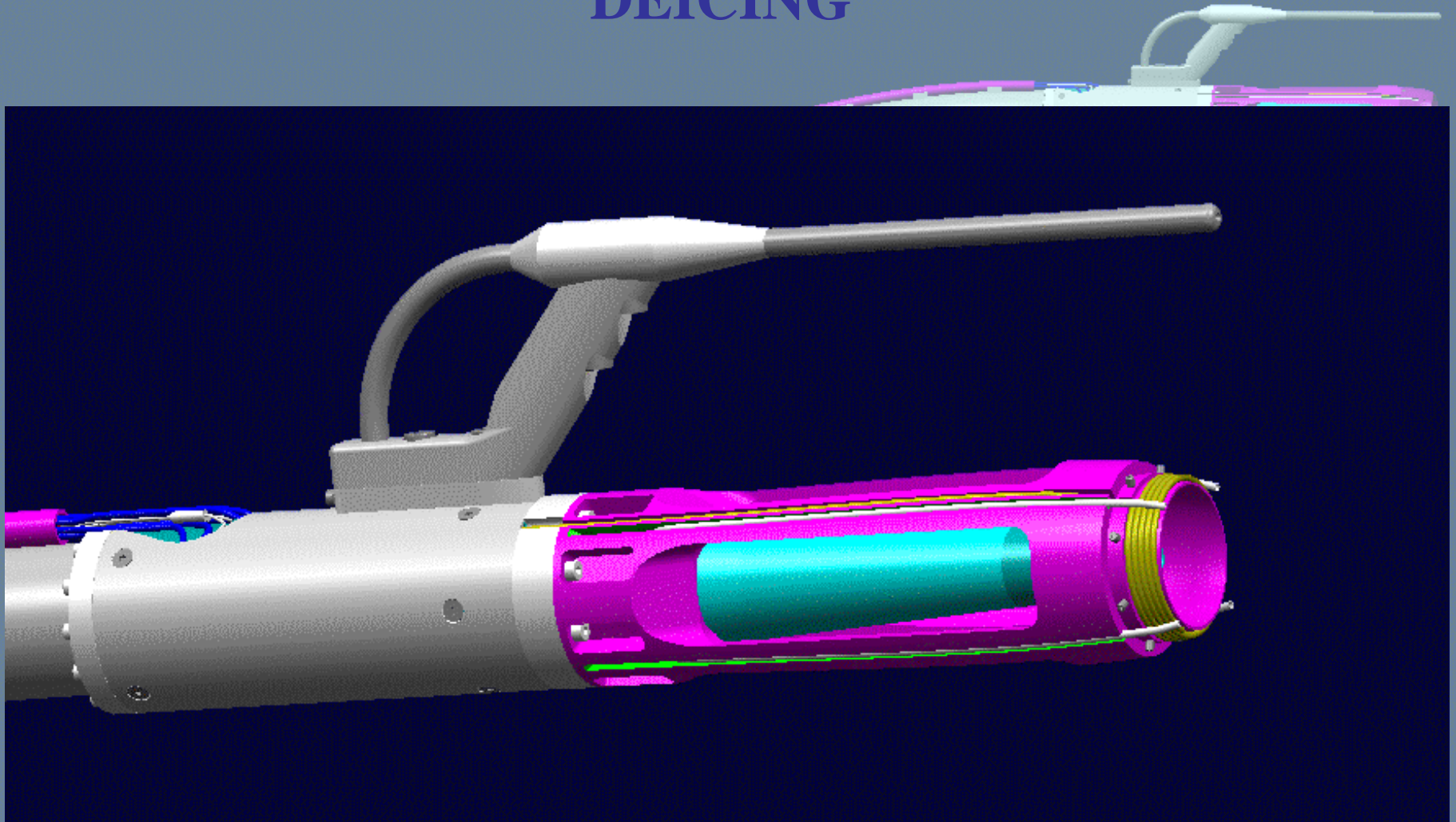
FLUENT Simulations (P. Nacass - UMS SAFIRE)

ALIGNMENT



Two actuators control (0.01 mm) the alignment.

DEICING



TAS = 150 m/s, $T_{\text{ext}} = -10 \text{ C}$, $T_{\text{veine}} = +10 \text{ C}$, $q_1 = 1 \text{ g/m}^3$
2 THERMOCOAX for the diffuser (97 W) and the shroud (184 W)

ON THE SAFIRE ATR-42



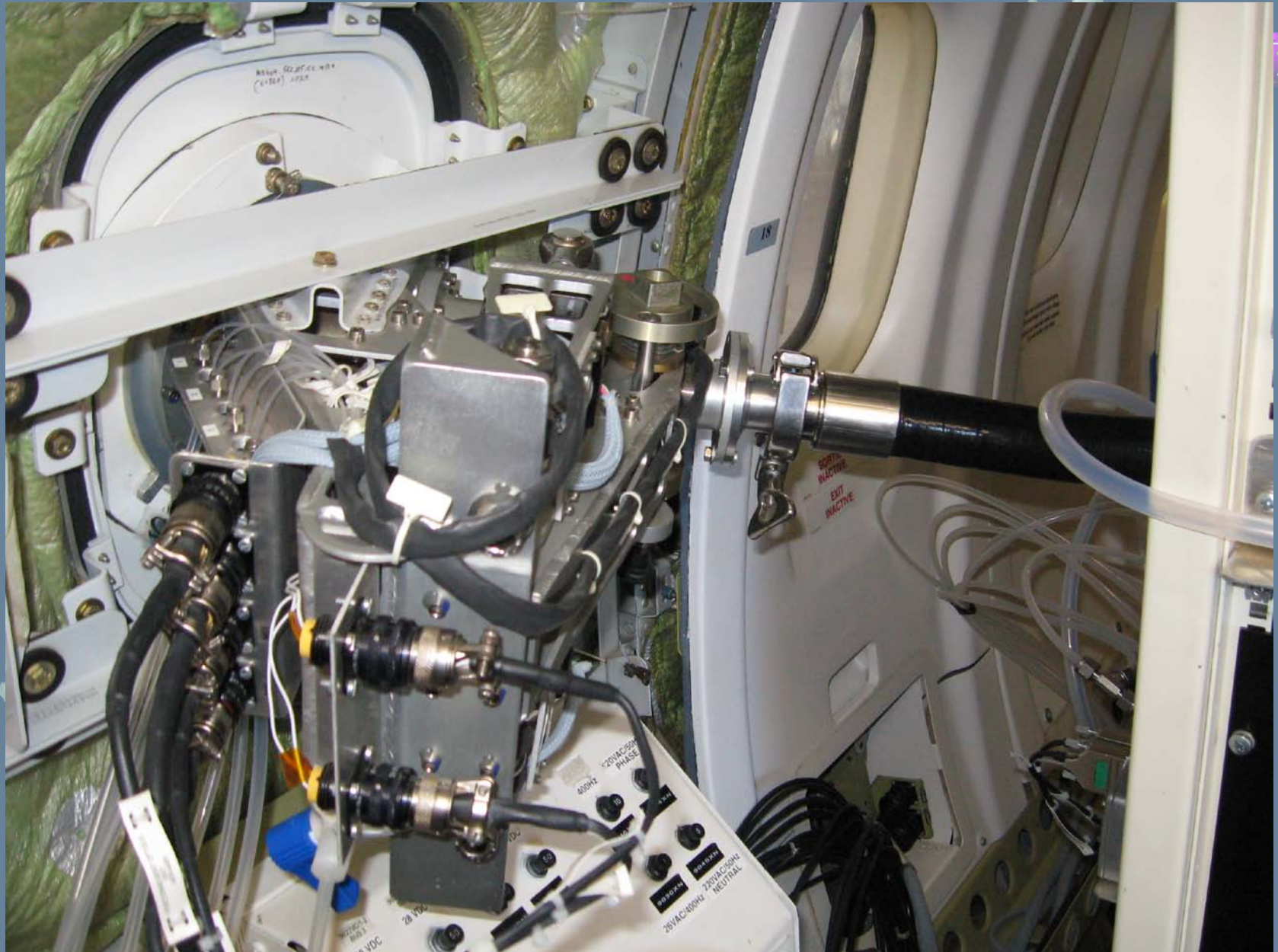
ON THE SAFIRE ATR-42



ON THE SAFIRE ATR-42



ON THE SAFIRE ATR-42



ON THE SAFIRE ATR-42

Supervision des Programmes de la Veine Communautaire

Mes

Post

Adc

Fav

Régulation des Débits et Isocinétisme

Régulation des Débits

Programmes VI

Marche Arrêt

On cpc3025A_1

grimm_1 Off

On cpc3010_1

regul ok? A B E F G I M N Q R S OC

N° Vol 00

Surveillance des débits de la Veine Communautaire Aérosol

Visualisation Annexes

ENTREE 1: TE 1					ENTREE 1: TE 2					ENTREE 2					ENTREE 3										
Voie	Nom	Consigne l/mn	Mesure l/mn	Etat	Voie	Nom	Consigne l/mn	Mesure l/mn	Etat	Voie	Nom	Consigne l/mn	Mesure l/mn	Etat	Voie	Nom	Consigne l/mn	Mesure l/mn	Etat	Voie	Nom	Consigne l/mn	Mesure l/mn	Etat	
A	BY_TE1	4	4	<input checked="" type="checkbox"/>	E	BY_TE2	2,5	2,4	<input checked="" type="checkbox"/>	I	BY_TE3														
B		0			F	DB_3025	1,5	1,5	<input checked="" type="checkbox"/>	J															
C		0			G		0			K															
D		0			H		0			L															
Q	DB_ML1_Q	16	16,1	<input checked="" type="checkbox"/>	R	DB_ML2_R	16	16,1	<input checked="" type="checkbox"/>																

ORIFICES CRITIQUES

P INT 1015,6 T INT 21,8 P OUT 390,9 etat_orifices

CAI

Positionnement et Isocinétisme de la Veine Communautaire

Isocinétisme

mode

P4: isocinétisme 10,897064 hPa

Volts 1,4

Seuil Pression 10

Coef -0,001

P2: totale-statique 21,58

vitesse estimée 59,89

Grimm 3

Grimm 1.108 -1.109

24/09/2008 14:51

Console Grimm prêt Données

Courbe 0

concentration en part/cm³

diamètre en micron

Grimm 3

Courbe 0

concentration en part/cm³

diamètre en micron

Grimm 3

Courbe 0

concentration en part/cm³

diamètre en micron

ON THE SAFIRE ATR-42



ARM AVP workshop on Aircraft Instrumentation - Urbana-Champaign (IL) 24-26 Oct. 2008 - J.-L. Brenguier