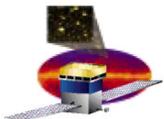




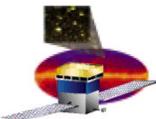
GLAST LAT CAL CDE Status



Financial issues



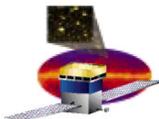
- **CNES has the needed money** for 2004,05,06 but
 - **The exchanges between CEA and CNES are agreement and invoices**
 - **French law prevent CEA to emit invoice in 2002 and 2003 to be paid in 2004**
 - **So with the transfer of some activities from CNES to ESA and the unknowing of its 2003 budget DSM head doesn't want to take risk (will it be reimbursed?)**
- **French government delayed the budget share out till 04 oct then CEA share its one and DSM got its one**
- **Since Integral launching success (last Thursday) DSM head has convinced himself to take some risks and has written a letter on Friday to give positive answer to CNES.**
- **DSM has already taken into account budget for 2002**



Management issues

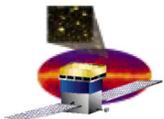


- One quality man will perform complete period of time with Glast. It was half time before.
- Two other projects have faced manufacturing problems. From one day to another the Glast dedicated technicians has to give help to these projects. This fact gives some discontinuity in Glast project and to delays. The priority is today again on Glast.





CDE EM status



EM-Xtal and DPD reception

- Xtal Dimensions

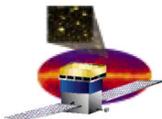
- On 16 received 15 Xtal have been accepted
- 1 will have to come from sweden

- Xtal Physical test bench

- The 16 CDE has been measured with the sweden test bench and we found same values. So we know how to use it.
- We think we have to learn more about this test bench and the paramaters which validate the acceptance

- DPD measurements

- Mechanical OK
- Visual inspection : 50 among 60 have passed through



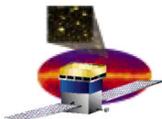
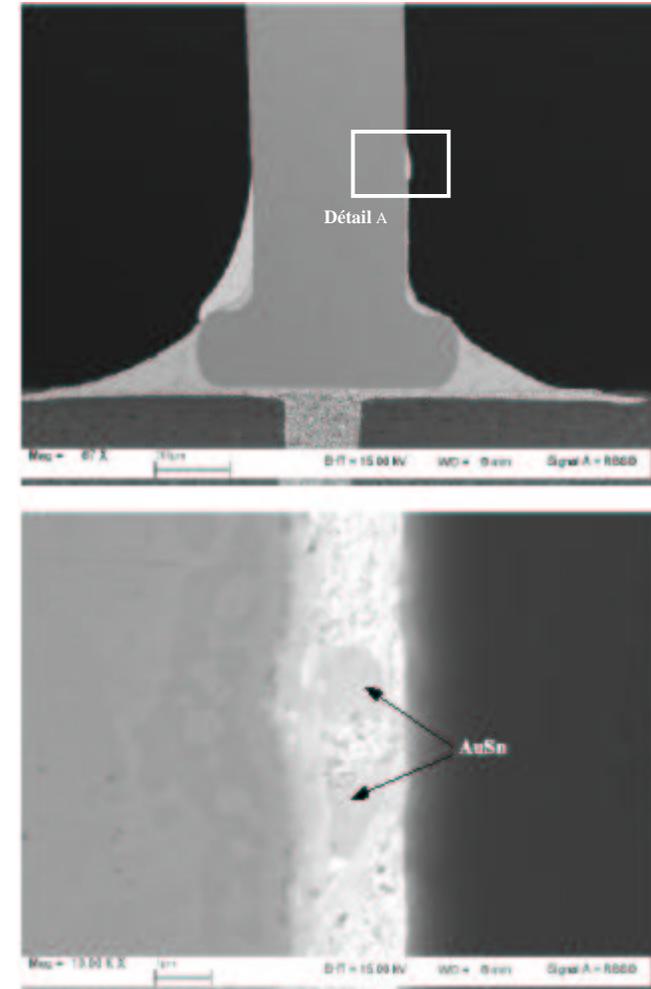
Degolding DPD Pins

- Tests to remove the gold layer with two methods have been performed

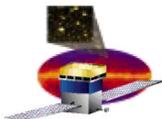
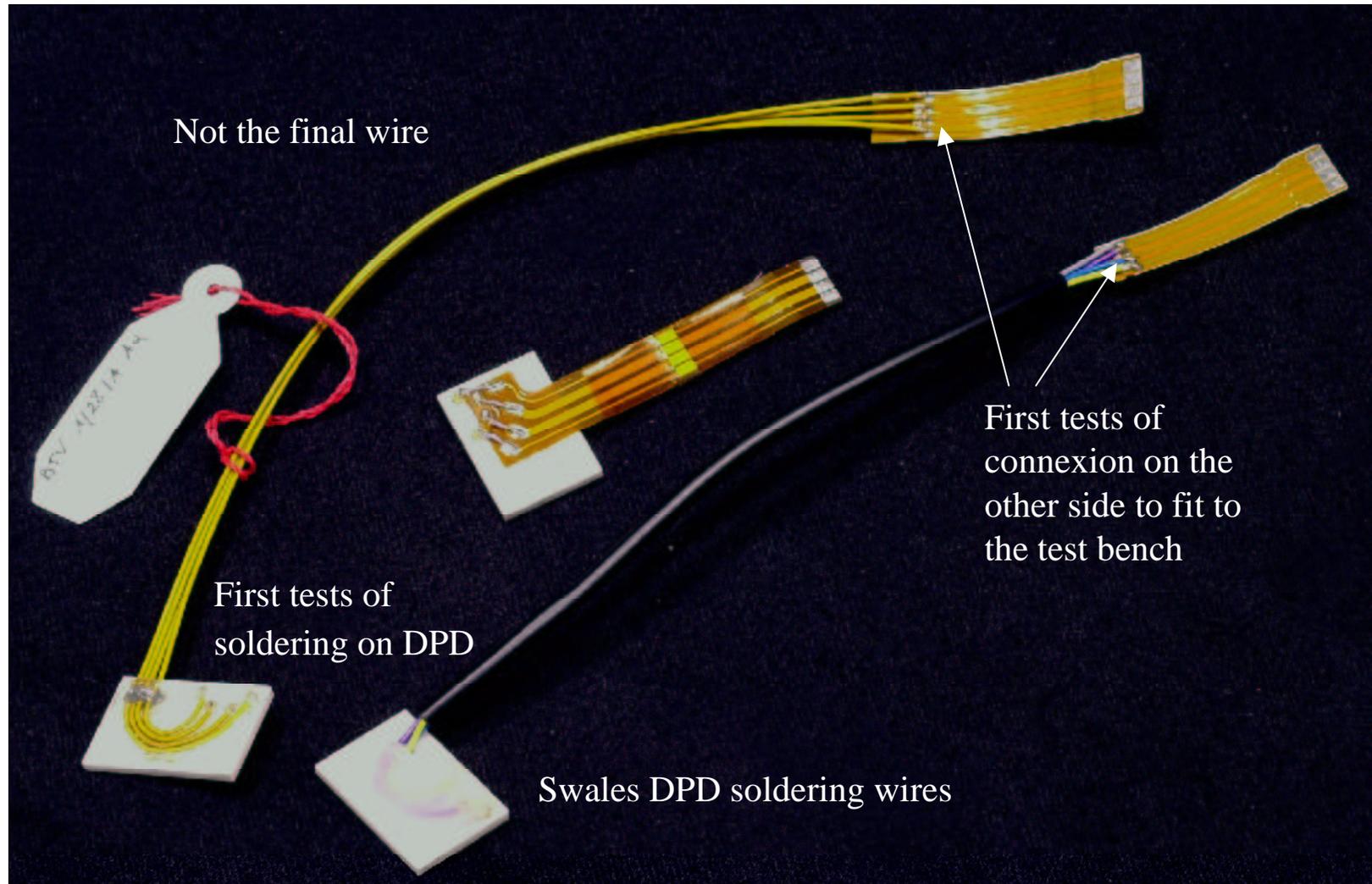
- Method with metal braid
- Method with unsoldered pomp

These two processes appears to be inadequate because we find some AuSn along the soldering area.

- We have performed tests on the method of degolding in a solder «dead bath» with a gondola. Analysis is on going



DPD Electrical connexion



Gluing development plan (1/2)



Phase 0 : comparative elements necessary to define the type of primary deposit

0A samples

Shearing tests after polymerization

Shearing tests before and after 60 thermal cycles

Pa or Pb
selection

Phase 1 : Comparative elements before and after thermal cycles to define the difference between a 24-hour and a 48-hour removal from the mold

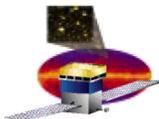
1A samples

Shearing tests after thermal cycles

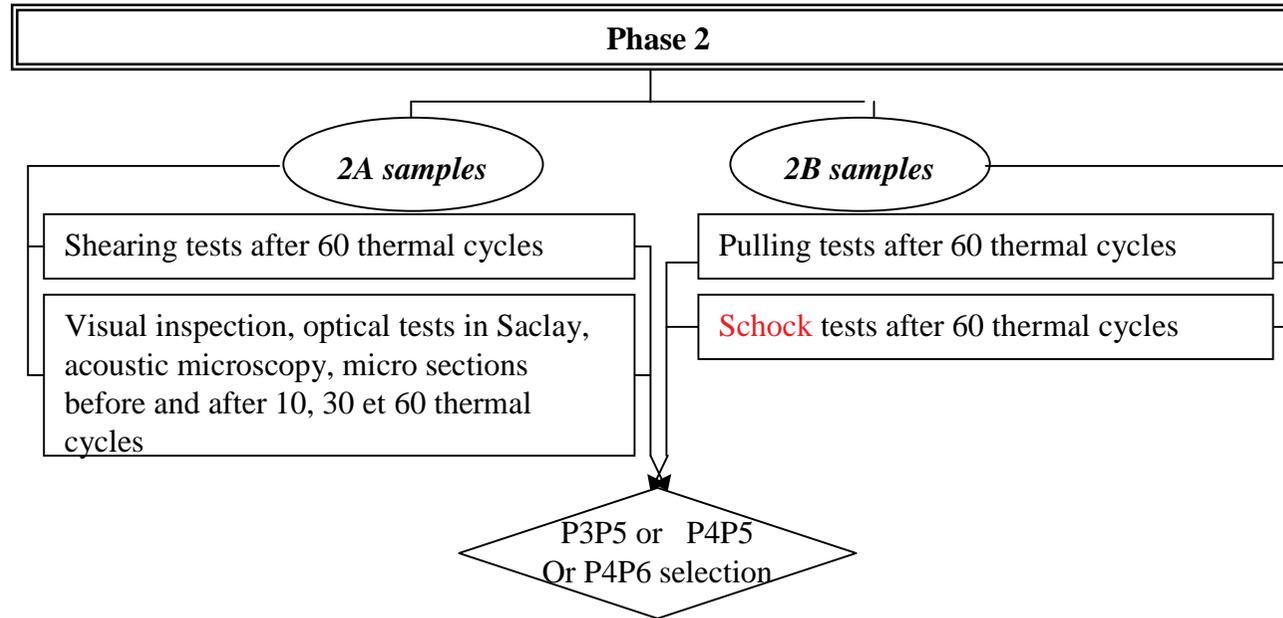
Readout before and during thermal cycles (10,30,60)

P1 or P2
selection

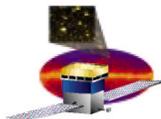
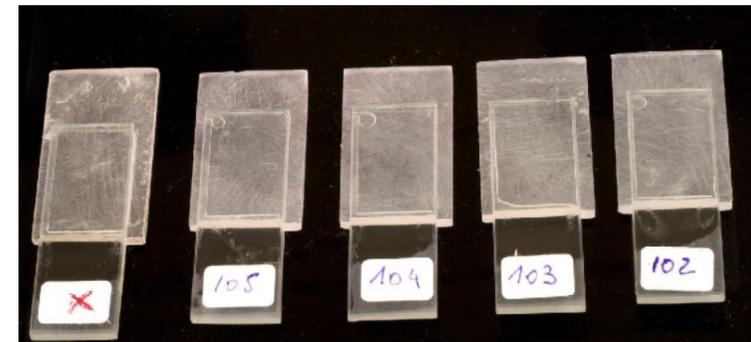
Phase 2 : Comparative elements to choose the cleaning agent to be used on the DPD and the CsI insuring a better adhesion



Gluing development plan (2/2)



- These tests leads us to choose primer deposit with a q-tips for clean room
 - No significant value to choose by shearing test
 - between and after 60 thermal cycles
 - between unmold after 24 h and after 48 h
- all values between 9 and 15 daN



Tuning of the gluing tooling (3 toolings)

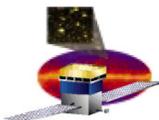
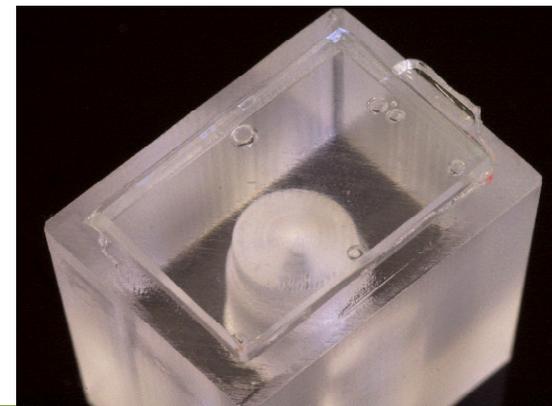
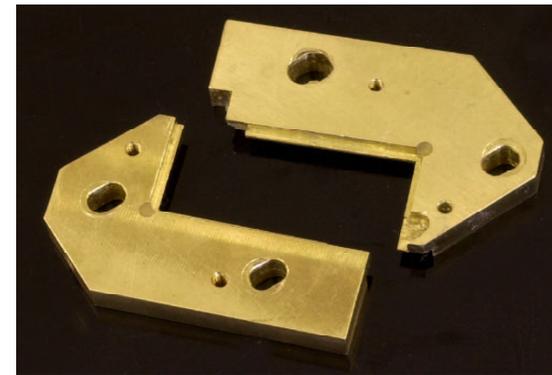
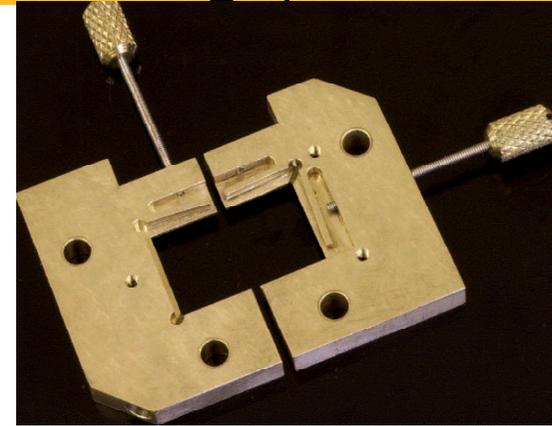
- Tooling 1 :

- Glue waste through leakages
 - **Between all surfaces**
 - **at the cut of the tooling,**Bubbles appears by lack of glue.
- Non reproducible bonding
- Extraction of the tooling push away the DPD
- Mechanical springs goes away their elastic limit

- Tooling 2 :

- Glue waste through leakages
 - **Between surfaces tooling/Csl**A bubble appears sometimes on one side by lack of glue in spite of the reserve of glue
- Non reproducible bonding

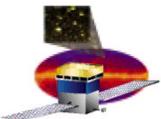
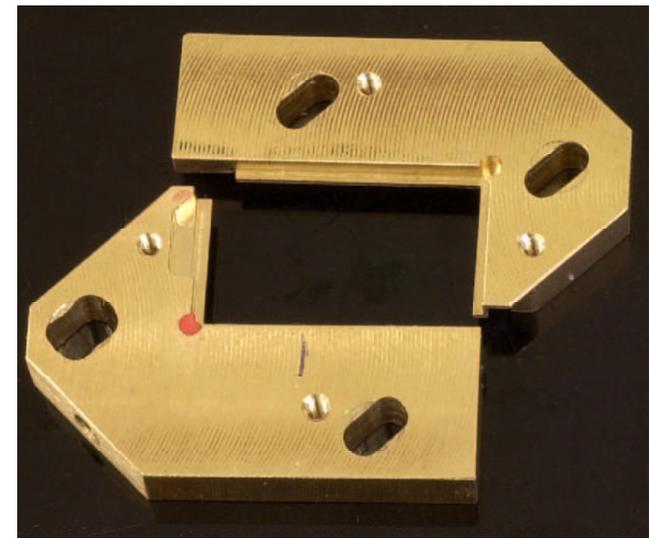
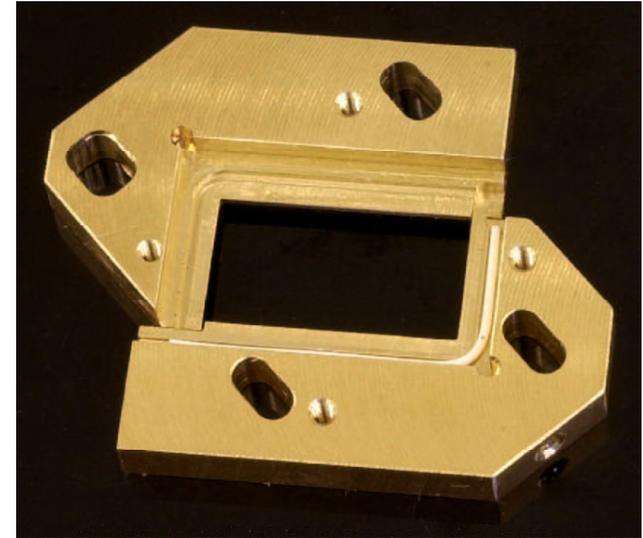
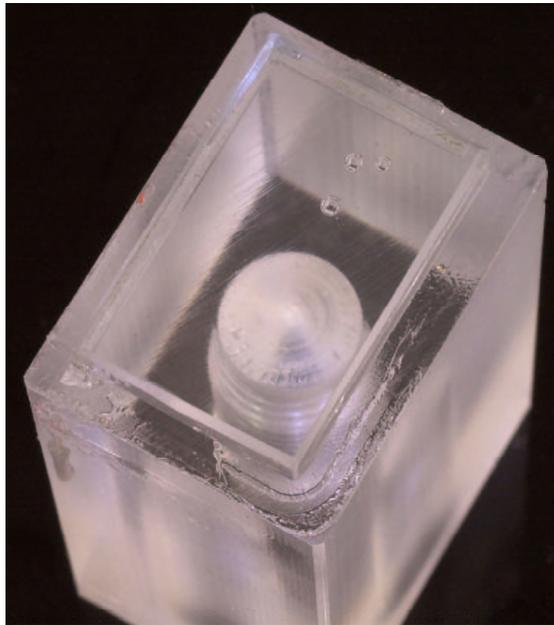
Care : Primer even in the good dates can be too old



Tuning of the gluing tooling (3 toolings)

- Tooling with a 0,5 mm joint and a big reserve
- First try without cleaning : bubble at the corner come to the center because of the flatness we need to adjust

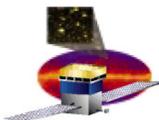
cea



Other tasks



- CDE DPD position control
 - It will be done with a special measuring machine in a clean room
- Wrapping
 - We have ordered the same tooling than NRL
- Acceptance test bench (muon) wait the CDE
- Packaging
 - Principe :
 - **each Xtal will have a V support with a special top = first packaging**
 - **This packaging will be the same when the Xtal becomes a CDE, will accept wires, will be wrapped in a dry pack**
 - **The dry packed packaging will be put in a sealed mallet which measure outside the dryness of the inside.**
 - We have done a prototype which was for the CDE+flex and are performing one for CDE+wire



Schedule EM

- Bonding

- Manufacturing of 8 toolings (joint) / 3 weeks/ (08 November)
- Tooling tests /1 week / (15 November)
- Gluing of 16 cristals /2 weeks/ (29 November)

- Wrapping

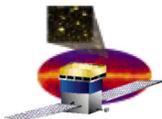
- Thermal form tool manufacturing /3 weeks/ 30 october
- Tests of tooling / 3 days / 05 November
- Wrapping and CDE manufacturing /3 days / 02 December

- Acceptance test of CDE

/1 week/ 09 December

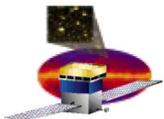
- Packing and shipment

/1,4 week /18December





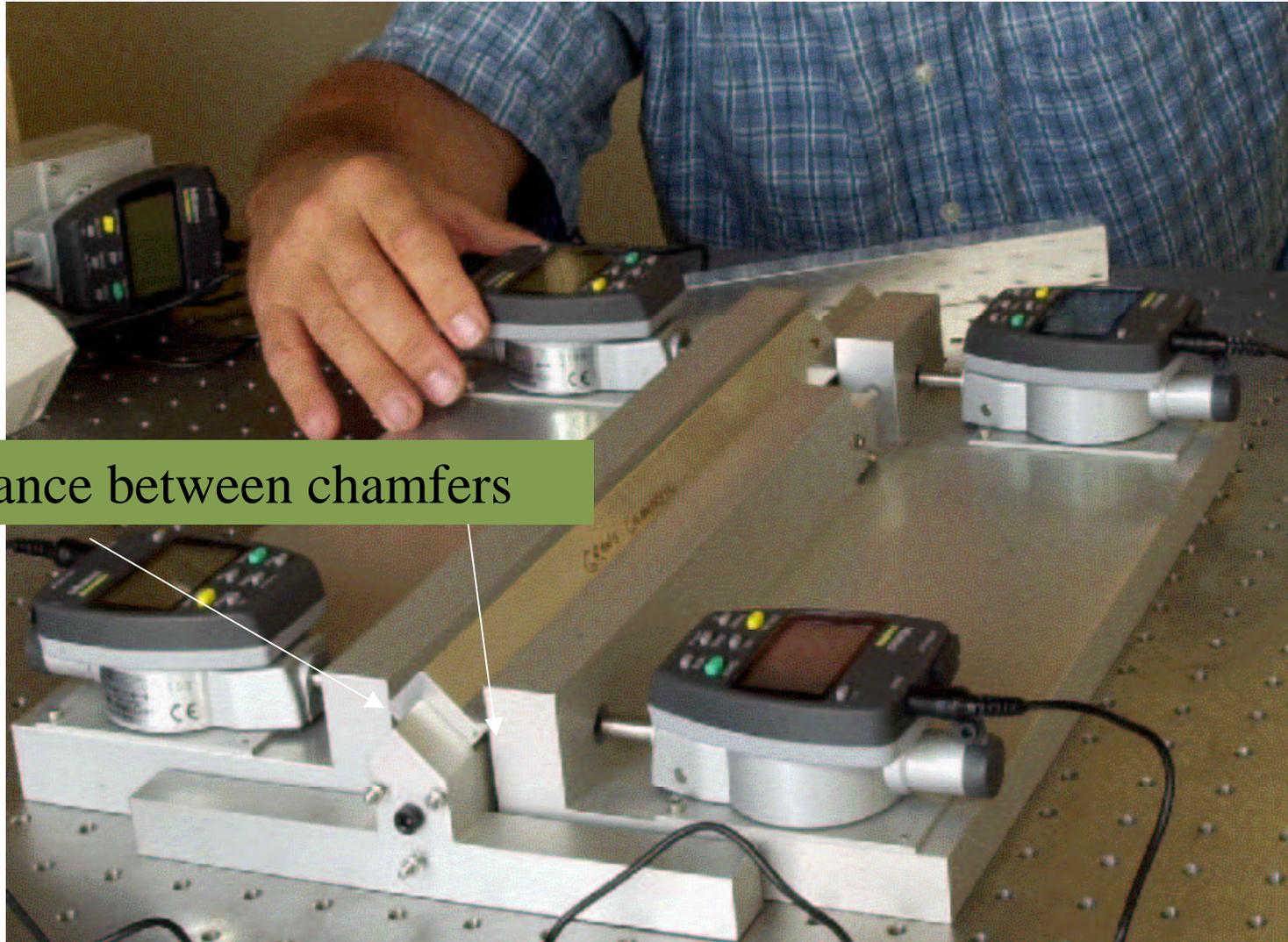
CDE-QM/FM status



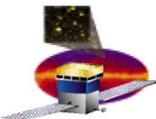
FM -Xtal reception(1/2)

- Mechanical control bench in acceptance test

cea



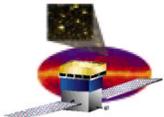
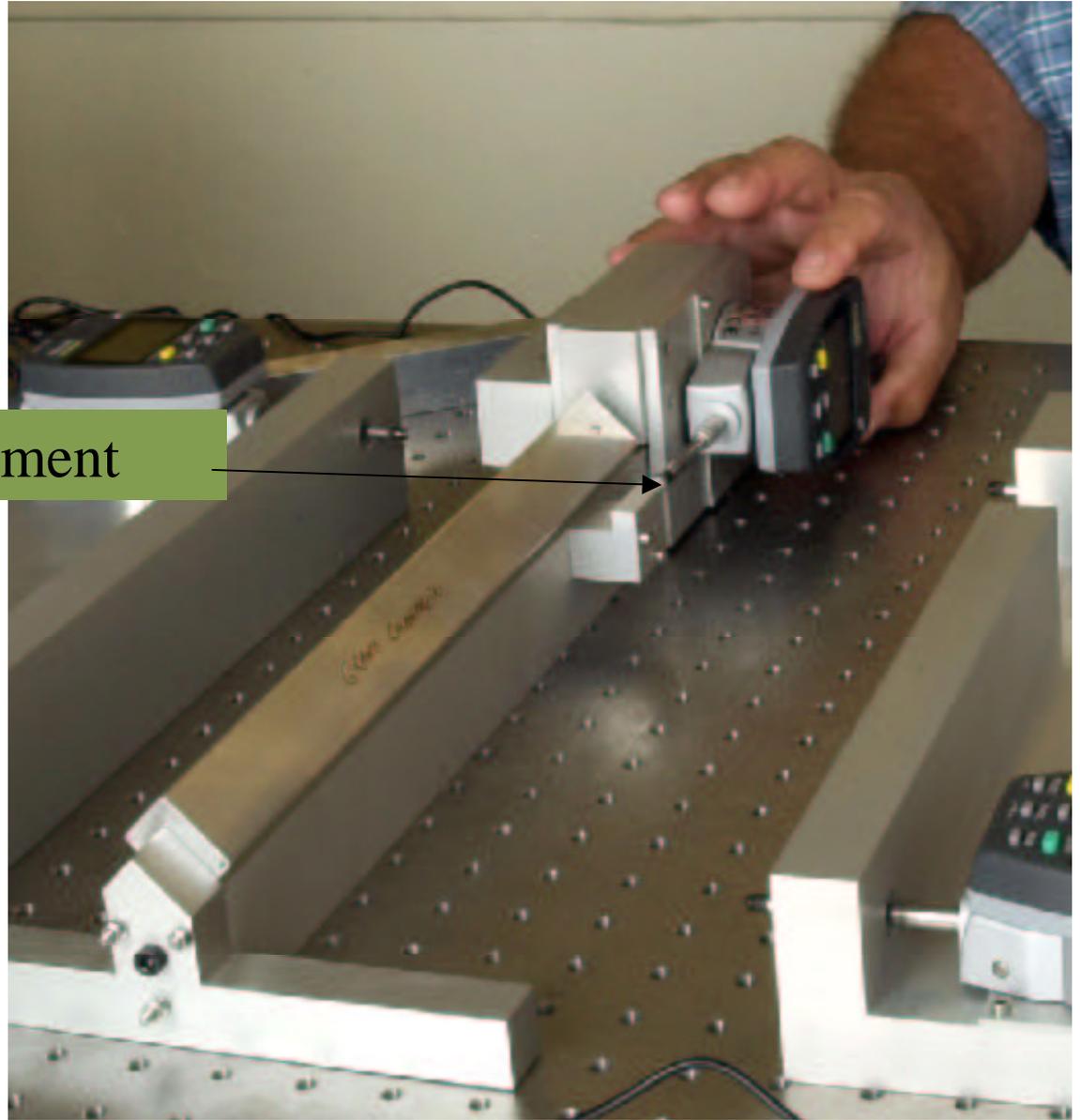
Distance between chamfers



FM-Xtal réception(2/2)

cea

Length measurement



DPD evaluation plan

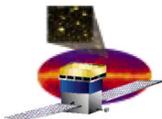


- The results of the three evaluations tests (and the result from the fourth in going) done have shown various results and particularly non reproducible :

- Sometimes the epoxy windows present delamination and cracks and sometimes just a shadow of delamination
- Our fourth evaluation test were based upon the supposition that cracks issues are dependant of the lot manufacturing of the DPD and of the drying temperature. So we took 10 from one lot,10 from another and dry them at 85°C then 10 more from the second lot and dry them like Hamamtsu à 150°C.

Results no cracks, no delamination no electrical discontinuity after 40 cycles.

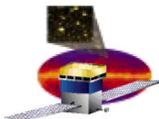
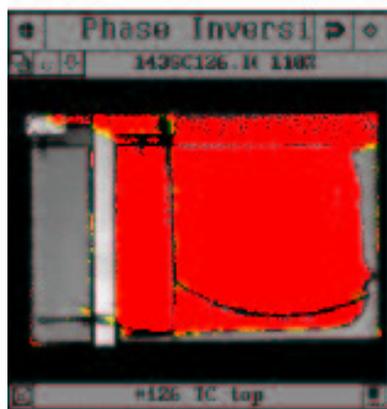
- We have made some rough simulation and we found on borderline 90 daN but this value can be a result of the limits of the simulation and we don't know the elastic limit of this epoxy



Analysis of DPD windows cracks



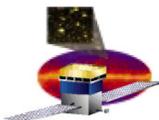
- Hamamatsu does not control its process
- To avoid the maximum stress (σ) goes beyond 25% of elastic limit of the glue window we need to:
 - Change the material of encapsulation to increase the elastic limit
 - Decrease the stress which depends
 - Directly on the difference of dilatation coefficient
 - Directly on the temperature
 - Oppositely dependent of the thickness.



Solutions for DPD manufacturing to study



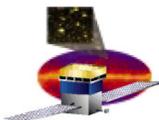
Proposed operation	Concerned parameter	Proposed solution	Possible ?
Increase of elastic limit		Choice of a window with a very high elastic limit like a silicon one	NRL choice Tests will be performed
Decrease stress	Decrease of difference of dilatation coefficient	Decrease the coefficient of dilatation of the glue window (ex : glass ball inside)	CEA back up 1
		Increase the coefficient of support with another material than ceramic	No (Si dilatation)
		No glue but a glass window	CEA back up 2
	Decrease of lengths	For example 3 areas if we cut the big diode in two parts	No interest (Gain < 50%)
	Decrease the temperature panel		NRL question to CAL
	Increase the thickness of glue		Increase the thickness



Other tasks



- Industrial Control bench with Yttrium and Cobalt source: two solutions with bench done at CEA
 - CEA give the bench to the manufacturer of CDE but we have to present a document to official persons = 6 months to get the authorization
 - CEA keep the bench and the manufacturer come and use it...
- Acceptance tests
 - Cosmic test bench will be ready for beginning of 2003
 - Mechanical control of DPD position will be ready beginning of 2003
- Packaging (to discuss with NRL after first delivery)



Schedule for QM/FM



- The administrative first step of call for tender was done (we get three answers of space manufacturer)
- We have to write the procedure of bonding and wrapping and then we will do the call for tender. It will take 40 days to get the answer.
- Our projection : July for the first CDE

