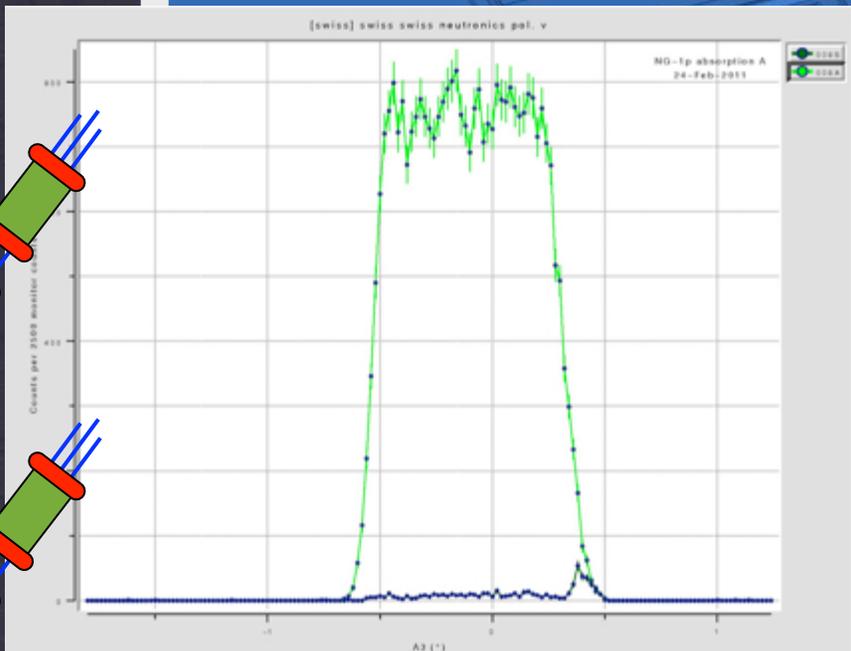
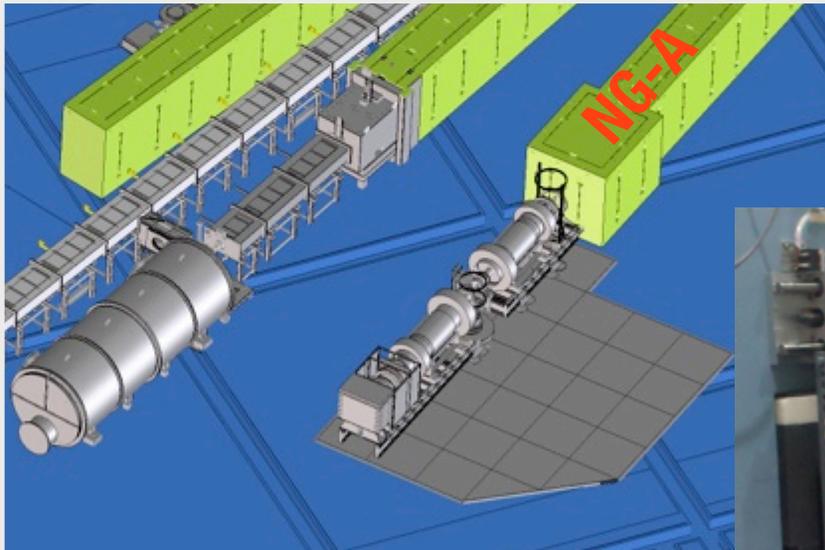


# Moving Spin Echo in 2013



M. Nagao, A. Faraone  
N. Maliszewskyj, P. Tsai, M. English,  
G. Baltic  
C. Brocker and Ed Binkley

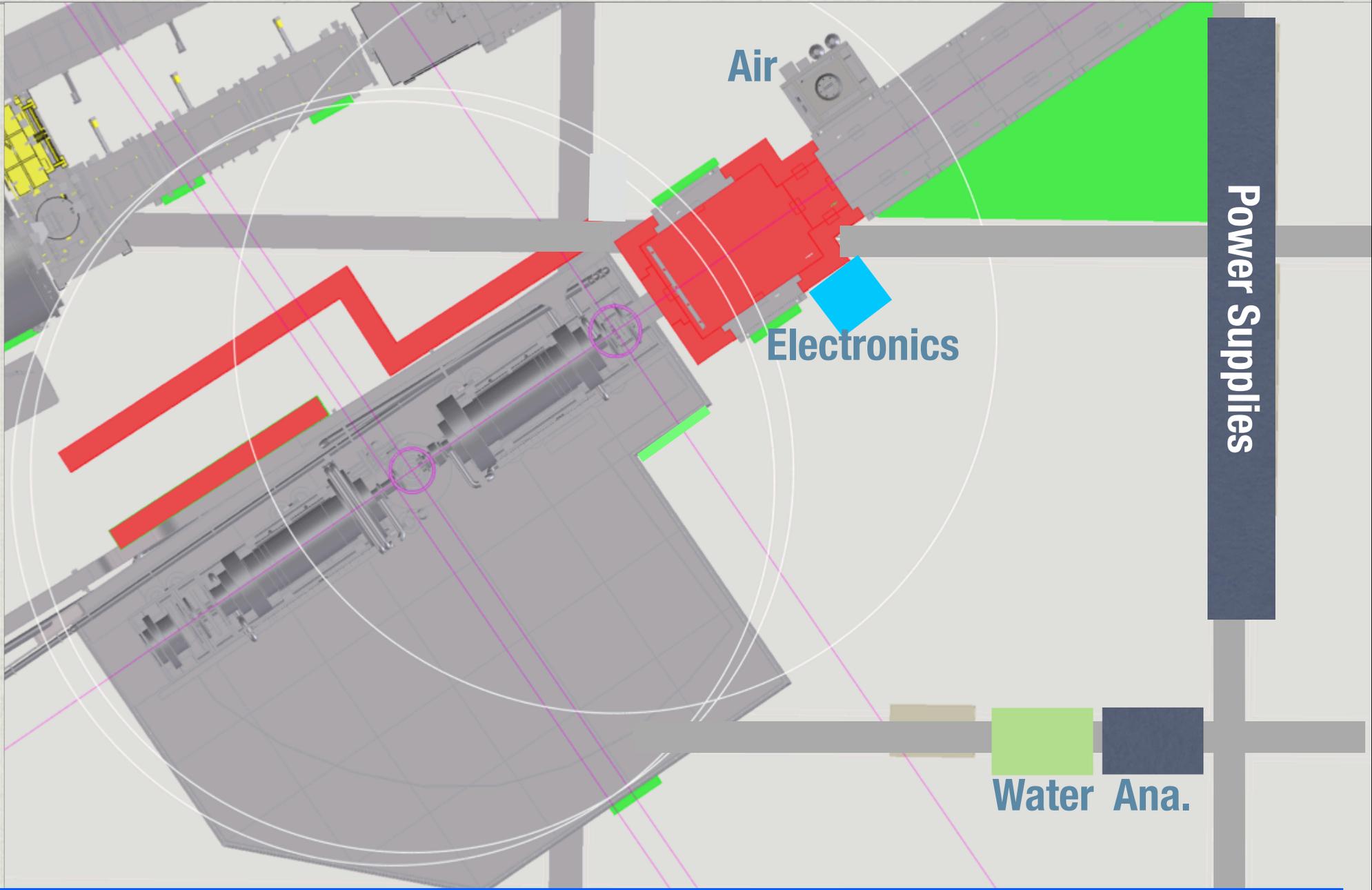
# The Plan -

- \* Move the spectrometer to:-
  - \* Reduce the magnetic “contamination”
  - \* Increase performance (Higher FT and  $|Q|$ )

**NEW POLARIZER, NEW POWER SUPPLIES, NEW SOFTWARE,  
MUCH IMPROVED SPECTROMETER**

**FURTHER IMPROVEMENTS  
NEW ANALYZER, NEW CORRECTION COILS**

 **ALMOST NEW SPECTROMETER** 



Air

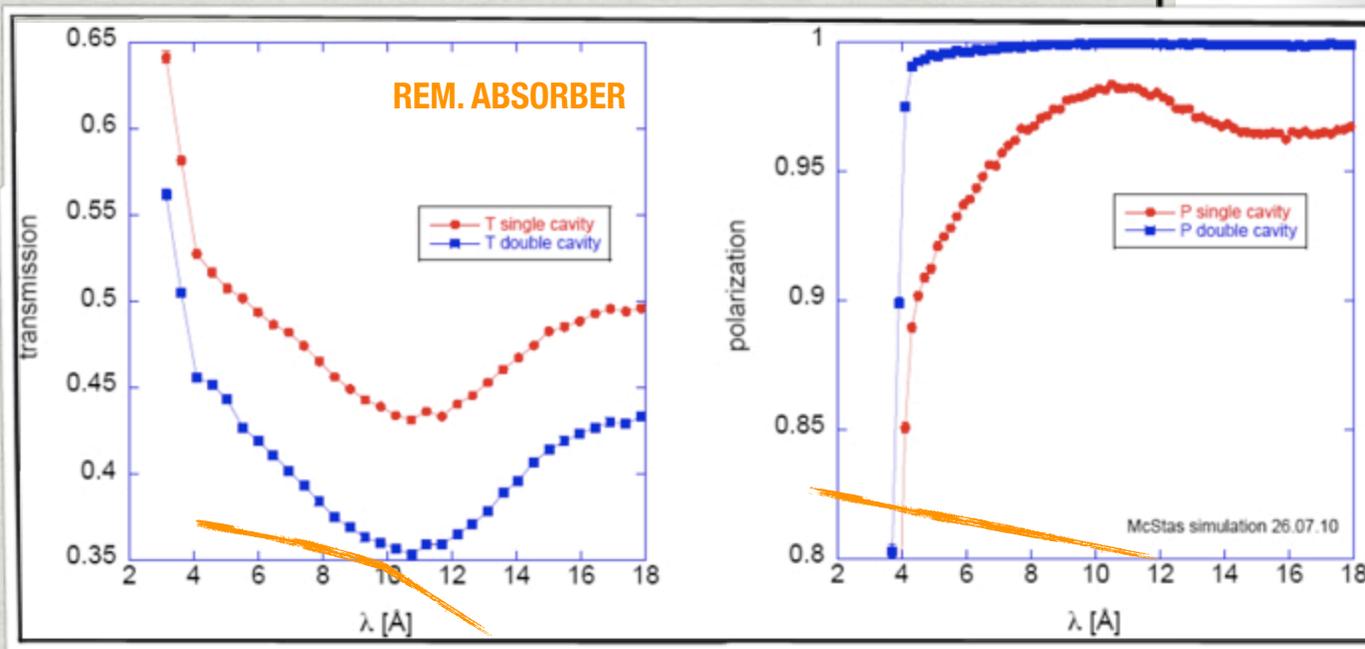
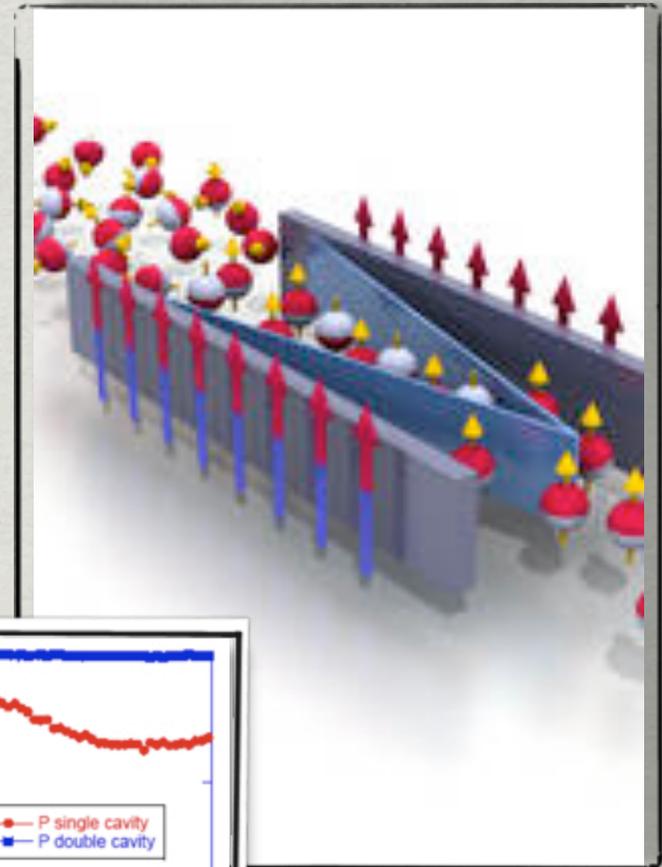
Electronics

Power Supplies

Water Ana.

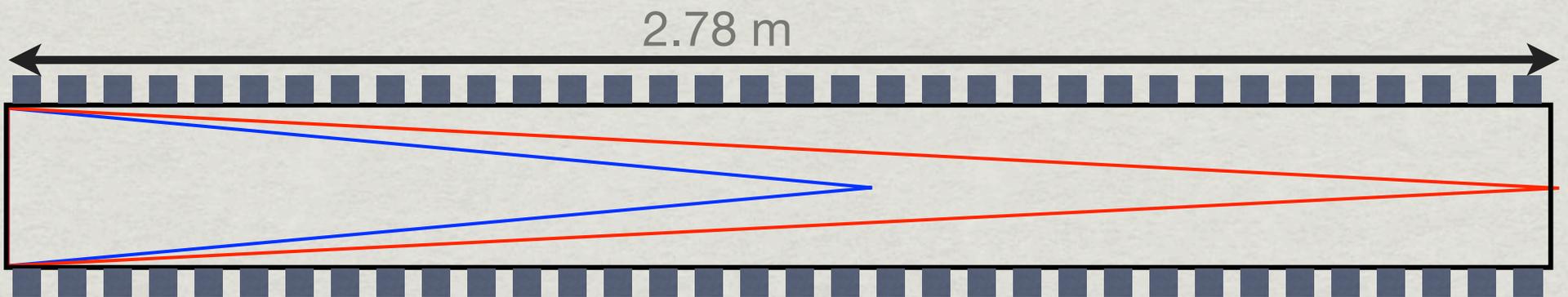
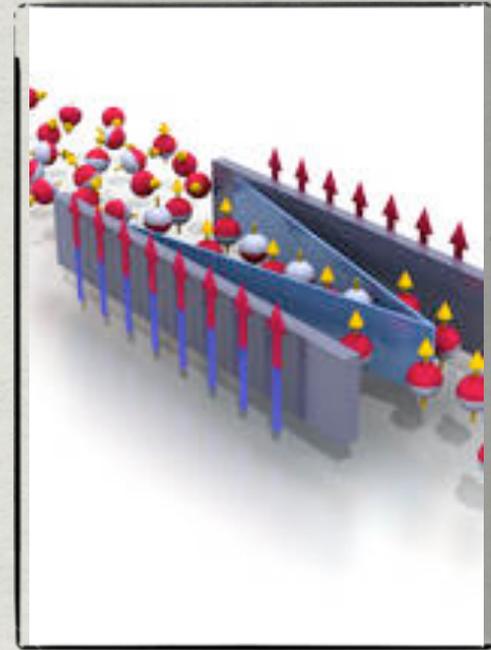
# Polarizer

- ✱ New polarizer
- ✱ produces its own 500G polarizing field
- ✱ Going with double V [(290 x 9 x 7)cm]



# Polarizer test

- \* New polarizer ([HERE](#) - Jan. 2012)
- \* Demo piece tested on NG1 (Feb. 2011)
- \* 99% polarisation at  $4.75\text{\AA}$



# HardWare



# Power Supplies

Alpha Scientific in California



More Stability  
No relays

More power for longer FT's & shorter  $\lambda$   
Site visit and design review - March 2012  
Expected delivery in late summer



# Wiring

- \* 34 power supplies controlling fields to 1mG
- \* Location picked. NIST plant will be informed soon to provide water and power (exp. in Feb 2013)
- \* Approx. **50m** of copper per power supply
- \* Most work done **before** shutdown (4 +2)weeks



**\$15 k**  
**6 weeks**

# Dance Floor



~50m<sup>2</sup> (30% bigger)

Same style of floor

No need to change air pads

Fill Cryogenics from EAST side

Include a RAMP to reduce  
the use of the crane

\$30 k  
4 weeks

# Moving from NG5



**The cooling  
(gas and water)**

**safety systems (temp. sensors)**

**motor control**

**monitor systems**

**detector system**

**Neutron Velocity Selector**

# Software



**New computer system to make the transition easier and to make the user experience a better one.**

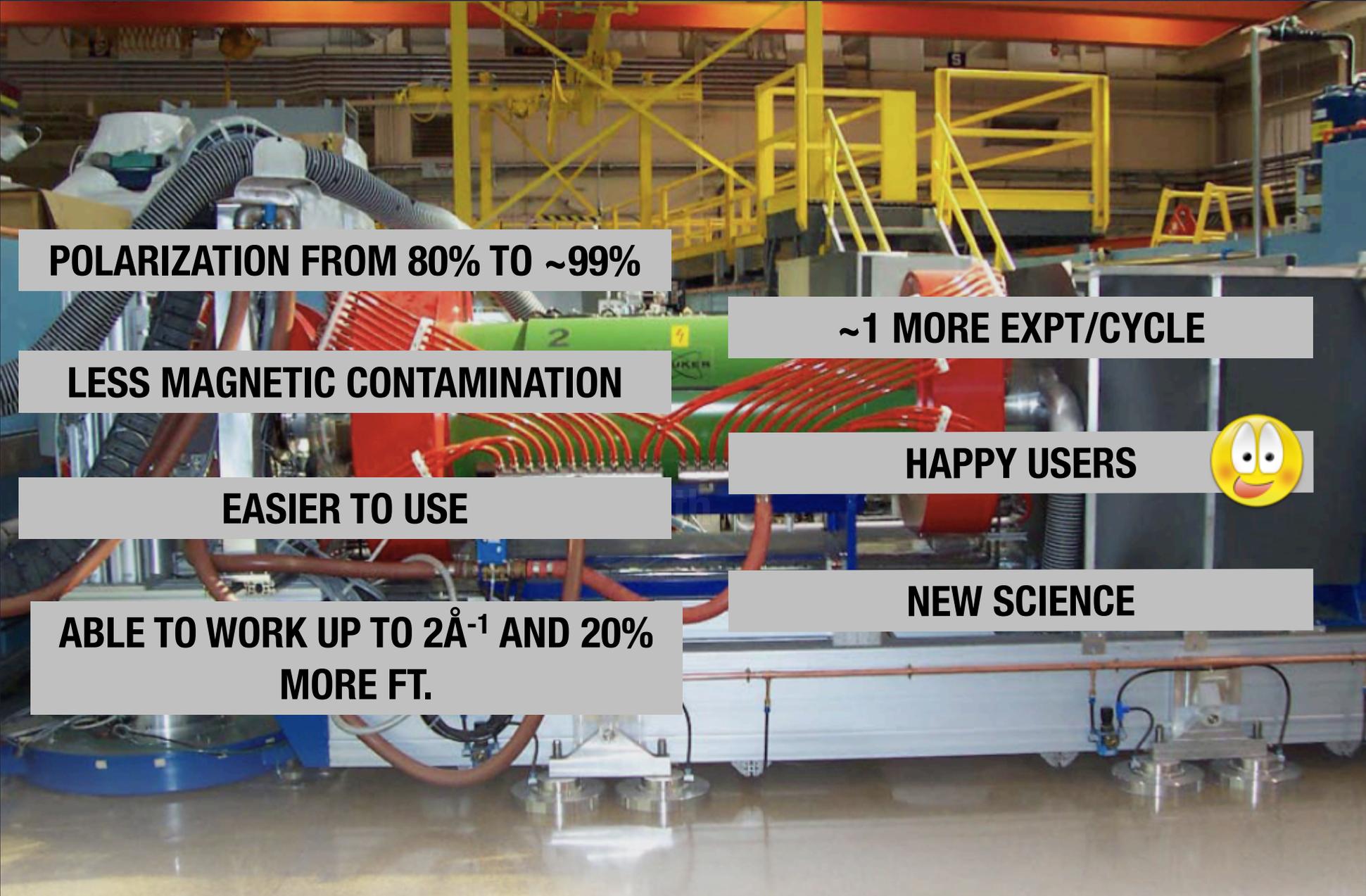
**Already talking to NICE**

# The Spectrometer

- \* 3000 kg solenoids + extras
- \* can be secured and lifted
- \* ~10cm increase in sample table radius
  - make field handling easier at sample
  - z-stage at the sample position
- \* ~20cm more space at the analyzer

**A FEW DAYS TO MOVE AND  
A FEW WEEKS TO ALIGN AND RETUNE**





**POLARIZATION FROM 80% TO ~99%**

**~1 MORE EXPT/CYCLE**

**LESS MAGNETIC CONTAMINATION**

**HAPPY USERS**



**EASIER TO USE**

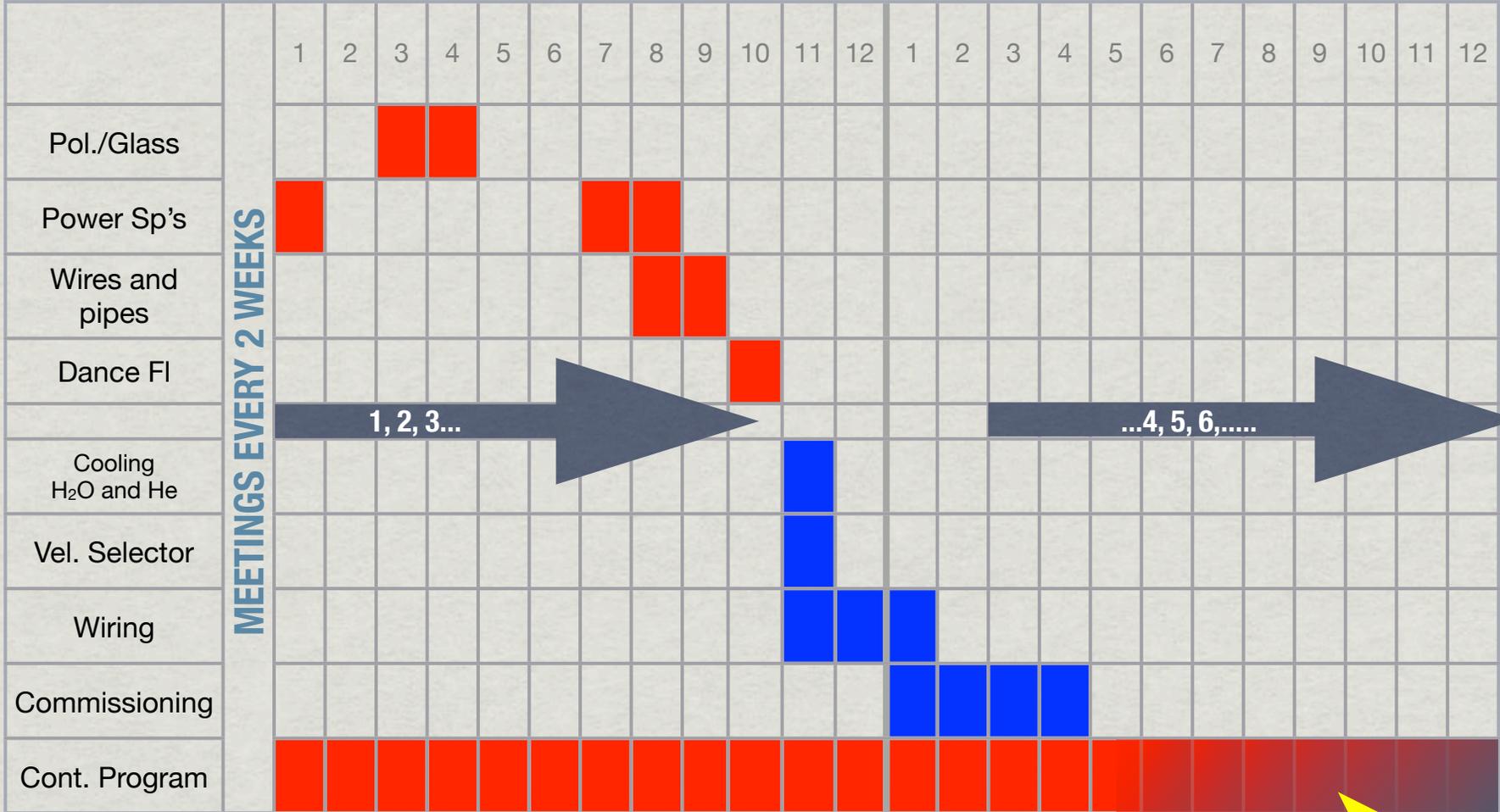
**NEW SCIENCE**

**ABLE TO WORK UP TO  $2\text{\AA}^{-1}$  AND 20%  
MORE FT.**

# Quick Time LINE

STOP COUNTING  
AT NG5

START COUNTING  
AT NGA



MEETINGS EVERY 2 WEEKS

1, 2, 3...

...4, 5, 6,.....

USERS

## NG-A Site Preparation

### a. Guides and shielding

- i. Velocity Selector
- ii. Polarizer **ca. 2013**

### b. Shutter Controls

### c. Dance Floor

- i. Trench sealing/reinforcement
- ii. Dam **June 2013**
- iii. Pour and cure epoxy

### d. Power Supplies

- i. Delivery **Sept 2012**
- ii. Installation
- iii. Site acceptance testing
- iv. Electrical Power
- v. Field wiring **May 2013**

### e. Utilities

- b4 March 2013**
- i. Electrical power branch circuits
- ii. Chilled water
- iii. Compressed air

## NG-A Spectrometer Installation

### a. Cooling ( $^4\text{He}$ and Water)

- i. Install **July 2013**
- ii. Test

### b. Solenoids and Sample stage

- i. Install **July 2013**
- ii. Connect to field wiring
- iii. Connect to He cooling
- iv. Connect to compressed air
- v. Motor controls cabling
- vi. Detector cabling
- vii. Align **Aug 2013**

### c. Analyzer Power Supply

- i. Install **Aug 2013**
- ii. Electrical power
- iii. Field wiring (**May 2013**)

### d. Control Area

### e. Commissioning

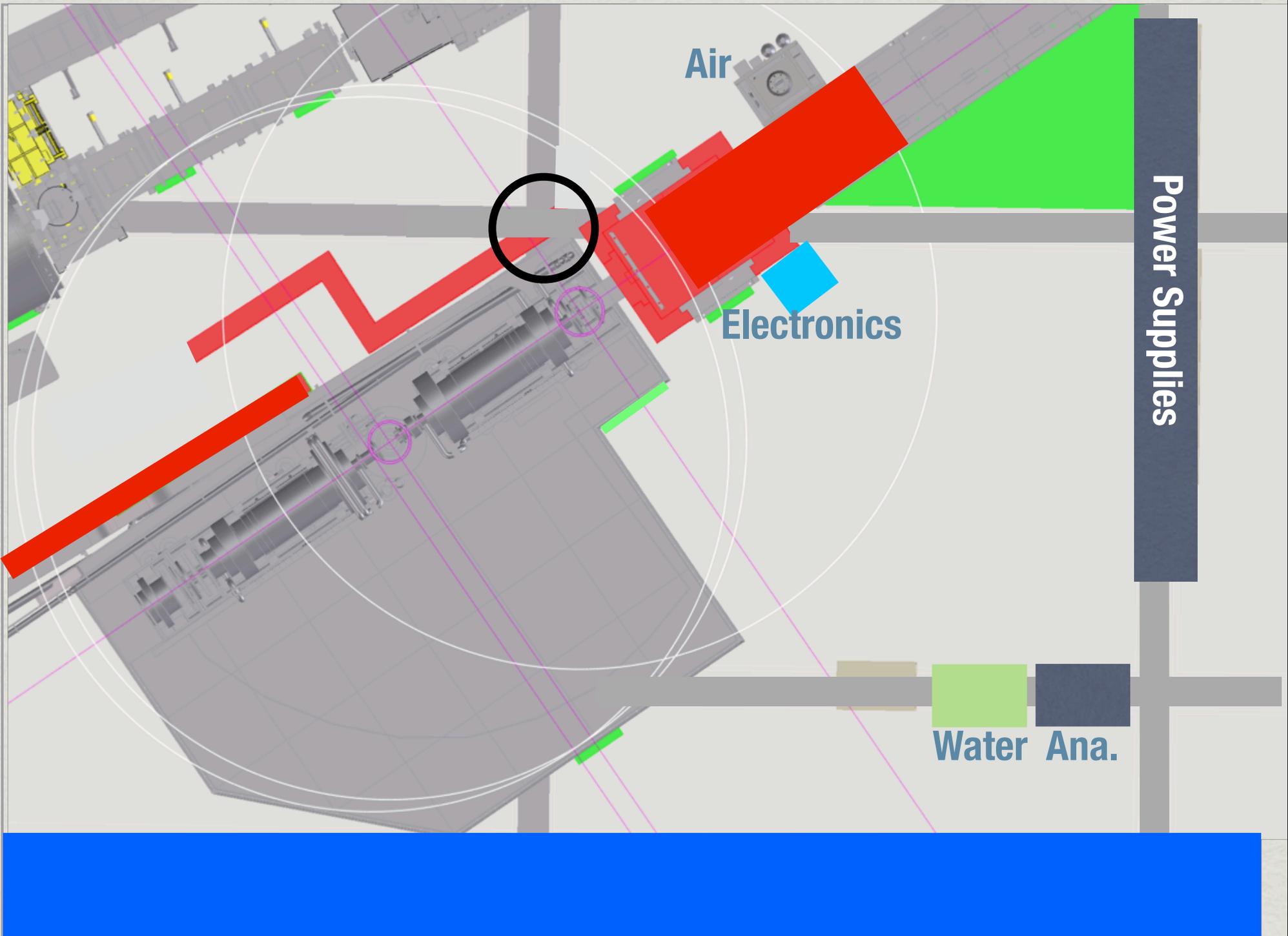
**Sept 2013**

## NG-5 Demolition

### a. Remove wiring before V-SANS

- b. Remove Polarizer
- c. Install Beam stop

**ASSUMING A JAN. 2013 COMPLETION OF NG A**



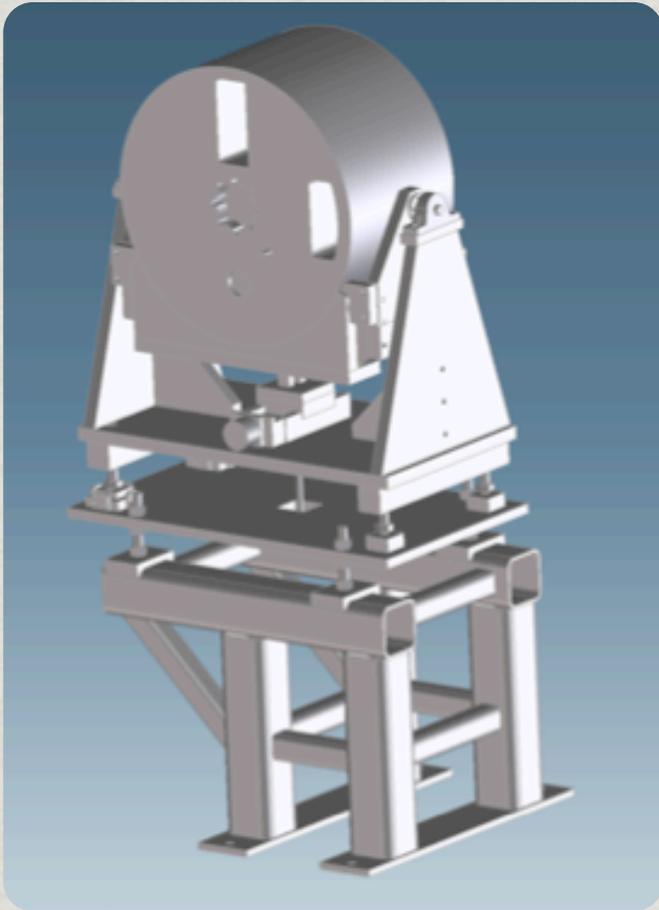
Air

Electronics

Power Supplies

Water Ana.

# NVS - Velocity Selector



**WILL BE USING THOSE FROM NG5  
CURRENTLY HAVE 3 FOR NSE**

**TO SPEED THINGS UP WE COULD MAKE A  
NEW CRADLE (OR NEST) FOR NGA**

**THIS COULD BE  
BALANCED AND CENTRED  
POSITIONED AND POWERED UP  
BEFORE NG5 STOPS COUNTING**