PS/HP/Note 98-03 (Min.)
AD Note 23
12/2/98

Minutes of APAL meeting no. 12
AD samplers / Application program progress

T. Eriksson

Present: J. Buttkus, V. Chohan, D. Dekkers, T. Eriksson, M. Giovannozzi, G.-H.H emelsoet, M. Le Gras, S. Maury, U. Mikkelsen, D. Möhl, H. Mulder, K. Nielsen, P. Odier, F. Pedersen, E. Roux, G. Segura, C. Serre, M. Shirakata

- **AD SAMPLERS:**

Presentation by G.-H. Hemelsoet :

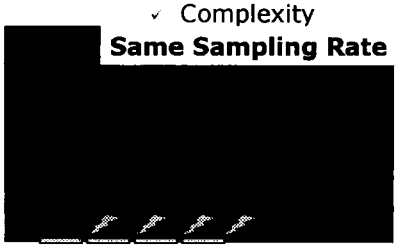
Sampler in the AD

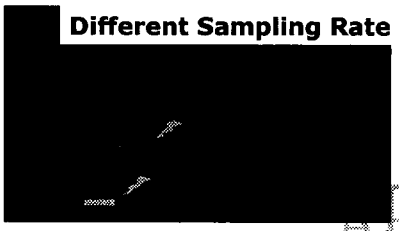
- How it works.
- The limitation.
  - Memory/Time Limitation
- The various users.
  - BD
  - RF
  - Power Supply
  - B Train
- Samplers vs Naos.

APAL
APAL

Samplers for AD

- Cycle Limitation.
  - Length
  - Freeze
- Operation Limitation.
  - Minimization of the Data Flow.
  - Complexity





APAL

Discussion :

- For the AD cycle, samplers using 2500 points with 40 ms resolution could be considered.
- A proposal has been done to use the NAOS system in scroll mode with permanent capture. A 20 second display length would yield 40 ms resolution.
- A system using samplers with different rates would more or less correspond to the NAOS system.
- There is no cheap solution, a new "slow" NAOS will be expensive as well as using samplers.
- Signal transmission problems must be taken into account as well.
- The different samplers should use identical and fixed settings.
- Certain rf-signals need high rates and several start triggers over the AD-cycle.
- No fast sampling system is foreseen in the CO budget.
- One proposal is to use samplers for the slow and NAOS for the fast signals.
- The question is whether to use samplers, NAOS or both.
- Conclusion : an inventory of the signals to be observed and the corresponding characteristics needs to be done. Action : T. Eriksson

- **AD APPLICATION PROGRAM PROGRESS**

Presentation by H. Mulder :

From the design report...

- 13.2 Routine Operation
  - ☺ ...but the routine facility operation will be left to the users themselves... This implies a high degree of automation.

- Degree of automation foreseen:
  - ☺ ***Sufficient***...for commisioning by ***specialists***
  - ☹ ***Average (insufficient ?)*** ...for "routine operation by the users themselves".

ADAP

Development stages

1. Design & specification of the system involved
   - ***applications programs are the last in the overall chain...a lot details only clarified since end 97***
2. Specification of the AP
   - ***important! ...and time consuming***
3. Development of 1st prototype
   - ***only 50% of the job***
4. Testing on hardware → debugging
   - ***need hardware! ...from 1/6/98?***
5. Testing in operation → required modifications
   - ***need operational experience ...during commisioning***
6. Implementation of modifications
   - ***need original programmers at hand ...not obvious!***

ADAP

Application Environment

- Development tools
  - *UIMX & C, user problems*
  - *JAVA, availability?*
- Equipment database
  - *OB names & WS being defined*
- Physical database
  - *Database setup?*
- Cycle interface
  - *console manager, GFA bumper,...*
- System interface
  - *Archives, REF, BUF, CCV*

ADAP

ADAP

Generalities & Solutions

- ...
- Adaptation to the AD Cycle
  - particular solution for the long cycle
  - One "active" Break Point per AD cycle
  - Predefined number of "Multiple Injection"
  - PS/PSB synchronization
- ...
  - ...
  - ...

Organization & Responsibilities.

- Operation Team (HM, TE) in charge of :
  - User Requirements
  - Definition of Equipment to be controlled (OBnames)
  - Specification and realization of workstation Applications
- Controls Team in charge of VME controls interfaces and Software in the DSC (EM, RT, Drivers)
  - E.Roux : layout and its implementation + Hardware Tests
  - GH. Hemelsoet : technical responsible of the AD Control System implementation (+ realization of DSC Software)
  - Ch.Serre : General coordination and planning

Planning

- Requests specified for end of January 98.
- February/March : Detailed specifications for EM & RT
- DSC Software done for June
  - **tests of layout (DSC, Timings, Basic Software) from ACR**
  - **tests of the specific control interface for the equipment**
- Commissioning in September 98 (from ACR workstations & Console Manager)
  - **tests of the Control System itself (with possible perturbations on CPS machine operations)**
  - **Participation to the starting up of the AD machine**
- For April 99
  - **integration of modifications identified during the commissioning**
  - **operational starting up**

Parallel development with CO

	WS	generic AP	specific AP	by	Comment	< Sep 98	Sep/Nov	Dec/Mar	Apr/May	> Jun
CE: main app	OK!		OK!	GSM & CO	imperative					
CE: timing editor	OK!		OK!	GSM & CO	Important					
CE: cycle bumper GFA			OK!	CO	imperative					
CE: archiving			??	??	important					
SC: graphic control for relays			OK	KN	imperative					
SC: power acquisition & on/off p.s.			OK	KN	imperative					
SC: cooling function editor			OK	KN	imperative					
Tune measurement subsystem & application program			?? !!	??	Imperative					
Orbit measurement (GUI)		OK		--	Imperative					
NMR & Btrain control	OK			--	Imperative					
RF hardware control H=1 and H=6	OK			--	Imperative					
Vacuum control	OK			--	imperative					
Magnetic horn control	OK			--	imperative					
Electron cooling display	OK		OK	GSM						
Kicker control		OK		--	imperative					
Tune correction			OK	KN	Important					
DC transfo readout			OK	??	Important					
MTV control				--	imperative					
NAOS				CO/OP	Imperative					

	WS	generic AP	specific AP	by	Comment	< Sep 98	Sep/Nov	Dec/Mar	Apr/May	> Jun
ABS: orbit correction		OK		MS	M. Shirakata & J. Schinzel produce db. H. Mulder & F. DiMaio (?) will elaborate cycle interface					
ABS:TT2 loop				MS	J.L. Mary & J. Schinzel produce db					
ABS:TT2 direct				MS	J.L. Mary & J. Schinzel produce db					
ABS: ejection lines				??						
ABS: coherent oscillation correction				??	after commissioning					
Varilog		OK		??						
Alarms		OK		--						
Operation display (as PS injection/ejection displays)		OK		BV						
Timing diagnostics		OK		CO						
Scraper control & profiles /emittances Blow-up beam & acceptance measurement			OK	BD						
lifetime measurement			OK	KN						

Other APs proposed or required after commissioning

	WS	generic AP	specific AP	by	Comment	< Sep 98	Sep/Nov	Dec/Mar	Apr/May	> Jun
AD Vistar										
Performance check										
ejection switching ("PPM")										
MWPC control										
1) OP procedures: Switch On/Off 2) OP Procedures: Change Polarity 3) OP Procedures: Change Mode										
Chromaticity measurement					Prototype in EXCEL					
Dispersion measurement					Prototype in EXCEL					
(fill in the blank space)										

DISCUSSION:

- **Tune measurement system:** no specifications exist today, no Eq. Module is foreseen for the moment. The efforts are presently concentrated on the pick-up. Specifications should be defined as soon as possible.

- **Orbit measurement:** The present PS/PSB AP:s could be used, but only giving one measurement per AD-cycle. Application user requirements should be defined with details such as data table use, need for several measurements during the cycle, saving of reference orbits, synchronization with ecooling pickups etc. Action : TE/HM

- **MWPC interface** should be foreseen for –99. BD is looking into it.

- In order to optimize the acceptance at 3.5 GeV/c, do we need an obstruction finding program like was used for the AC? Action : TE/HM

- **Planning:**
  Testing of AP:s can only be done after HW installation. A test DSC could be installed for some early tests.
  It has been proposed to make a few Java applications, but the CO Java support will only be available as from –99. Earlier AP:s will be done as prototypes by the CO-group.

- **Reminder:** Requests and questions regarding OB-names and timings should be done to T.Eriksson/H.Mulder.

OTHER QUESTIONS:

- Fast transformers : W-sets and timings remain to be defined.
- E-cooling measured beam positions will be stored in the local system and accessible via a data table, to be verified.