



## 12th MEETING OF THE SNX COUNCIL

Grenoble (France)

Wednesday 2nd and Thursday 3rd December 2009

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In Attendance: SNX Delegates

### A - SNX Delegates' Consultation Meeting

Exchange of views.

### SNX Council Meeting

In Attendance: SNX Members, SNX Secretary

### B – Closed Meeting - Confidential Matter

Confidential matter, see appendix SNX Delegates/Members

### 12/1 SNX RESOLUTION

### C. Open Meeting

In Attendance: SNX Council, SNX Secretary, Observers from RCN and SER.

Everyone is welcome to this meeting

#### 1. Approvals and Review

[D. Nicholson]

##### 1.1. Approval of the Agenda

The agenda is modified and the order changed as follows:

7.1. was changed to 5.3. EXAFS Commission Report

7.2. becomes 7.1. MoU MAXLAB

7.3. becomes 7.2. Proposal PILATUS 2M

7.4. becomes 7.3. Any Other Business

Additional points under item 8 :

8.1. Evaluation of Proposals

8.2. Assessment Committee

The new agenda is approved by all.

*Appendix No. 1. Original Agenda and Approved New Agenda.*

##### 1.2. Approval of the minutes of the 11th SNX Council

The dates for the 13th SNX Meeting are in MAY and not June 2010.

The minutes of the 11th SNX Council are approved by all the members

### 1.3. Review and results of actions decided at last meeting

**11.1.1. Helge LARSEN to get an estimated cost to have students at SNBL. Philip PATTISON and Chantal HEURTEBISE. Deadline 22 June 2009. Done 17th June 2009.**

No comments were made on the above point.

**11.1.2. A list of expenses should be issued regarding the upgrade programme (moving to new offices, purchase of furniture and expenses related to the workshop). Vladimir DMITRIEV. Deadline December 2009.**

List of expenses regarding the upgrade programme of the ESRF:

- Moving to new offices EUR 9'000
- Moving to new workshop EUR 10'000
- New cabins in Experimental Hall EUR 45'000 x 2 = EUR 90'000

Total expected amount EUR 109'000

The first need for these amount should be end of 2011 for the Experimental Hall, end of 2012 for the new offices, and workshop.

Action :

**12.1.1. Dates of the ESRF Upgrade to be communicated to the SNX Members so as to plan the costs for moving to new offices, workshop, plus new cabin in experimental hall (total estimation EUR 109'000). Vladimir DMITRIEV. Deadline May 2010.**

**11.1.3. Christoph QUITMANN to contact Rafael Abela to find out the position of the ESRF on this collaboration with ESRF. Deadline December 2009.**

Christoph QUITMANN reported that Francesco SETTE is open to a collaboration of SNBL with BM 29. It should be evaluated whether SNBL has a serious need of extra beamtime.

It was pointed out that the understanding was that there would be no financial contribution from SNBL, but staff contribution only.

Action :

**12.1.2. Helge LARSEN, on the Norwegian side, Jeroen VAN BOKHOVEN on the Swiss side, are to investigate the need for each community for the use of BM29 . Helge LARSEN and Jeroen VAN BOKHOVEN. Deadline May 2010.**

**11.3.1. David NICHOLSON is to organize consultations so as to find the outside baseline amount, namely CHF 52'500 for 2008 and CHF 50'000 for 2009. Deadline : December 2009.**

In the long term budget the amount for other contributions is mentioned. The Swiss side has a contribution from EPFL, which is a contribution to salary. The misunderstanding on the contribution from EPFL is clarified : the contribution from the Swiss side is in order to have someone promoting the SNBL in Switzerland.

The outside baseline amount is a contribution which is not in the contract, therefore not compulsory in that the amount might be different each year.

David NICHOLSON said that the Norwegian university stakeholders are not receptive for two reasons for contributing funds Outside Baseline or Outside Contract: firstly SNBL needs to get its affairs in

order (confidential matter) secondly the economic climate is not conducive. (This item will be further dealt with under the budget point.)

*Terminology defining the amounts of the income sheet :*

**Baseline** : according to “Contract” only.

**Outside Baseline** : amount NOT in the Contract. This amount might change each year

**Outside Contract** : amounts for specific projects.

**11.3.2. Christoph QUITMANN suggested that each SNX Member is to indicate how contributions can be found. Deadline December 2009.**

Christoph QUITMANN mentioned that funds are now more difficult to get. PSI, in the past, has managed to contribute to the SNBL, and is willing to continue contributing, but cannot commit regular payments. However, Christoph QUITMANN is to be contacted when there is a need for payment. A case by case decision can then be made.

**11.5.1. Establish a roadmap with timetable, costs, manpower, for work to be accomplished on the beamlines. Vladimir DMITRIEV – Deadline : December 2009.  
Roadmap/timetable/costs/manpower - to be approved by SNX Council.**

This action was not dealt with, and is reissued as action **12.4.1.**

The Activity Report 2007/2009 has been sent to SWISS OFFICIALS on 24th August 2009.

## **2. Report of the SNX Chairman**

**[D. Nicholson]**

This item is covered under separate items.

## **3. Report of the SNX Director**

**[V. Dmitriev]**

*See Vladimir DMITRIEV's presentation in Appendix No. 2.*

### **3.1. SNX and A-SNG operations**

- Shifts to Norwegian, Swiss and ESRF Users, and shifts for IHR and DUBBLE.

In October and November there has been some problems regarding the vacuum system on the B- station. This lead to the cancellation of a certain number of experiments on both stations. Run 5 of this year was difficult because of technical problems, partly due to the ageing equipment on the beamlines.

- Publications. There is already a higher number of publications for 2009.
- Comparison of publications done on three beamlines.

### **3.2. Report on meetings and Workshops**

- June 2009 - Workshop on *Diffuse Scattering in Crystalline Materials*, organized in collaboration with the ESRF. This workshop is important for future operations. Participants came from 10 different countries.

- Next workshop: no decision has been made regarding the next workshop. It may be organized for students / post-docs in order to show them what can be done at the SNBL, including on the basis of software. Should this be organized at SNBL ? This might increase our efficiency if full information is given to future Users.

The Council suggest that SNBL consider the following : due to the combination of techniques it would be very useful if SNBL could organise training lab courses using model experiments combining different methods.

### **Collaborations for 2009 :**

- Yaroslav FILINCHUK : Collaboration with Swiss Users (Radovan Cerny and Hans Hagemann). Collaboration with a Danish group, T. Jensen et al, and a Norwegian group (Bjorn Hauback et al).
- Vladimir DMITRIEV : Collaboration with the University College London (Paul McMillan's group) and University of Bath (Paul Raithby). In the context of that collaboration, Raul Quesada is sent to SNBL for one year, a post-doc coming from UCL.
- Dmitry CHERNYSHOV : Collaboration with the University of Stavanger (Helge Larsen). Ingunn Cecilie Oddsen came for a week at the SNBL.

### **Expected collaborations for 2010**

- two visitors from MaX Lab Institute will come at the beginning of 2010 (Jeppe Christensen and Dörthe Haase).
- Collaboration with one group from Germany, University of Siegen, a potential ESRF LTP. They will send a student, the ESRF will pay for his visit.

SNX Council requests SNBL to look into the possibility of organising workshops in partnership with SLS and MaxLab. The user communities should be invited to come with suggestions.

### **Publications**

Publications based on work carried out at SNBL : 32.5% are from Norwegian Users, 32.5% are from Swiss Users, and 30% are from ESRF Users. 16 publications are from In-House Research, which imply collaborations. Example of such a collaboration was with PSI.

Council notes that SNBL is productive with 10% of all ESRF publications coming from SNBL.

Statistics regarding publications are contained in the Director's presentation (see *Appendix No.2* ).

## **4. Financial Matters**

### **4.1. Income and Spending 2009 as of November 2009 (compte d'exploitation) [C. Heurtebise]**

*See Chantal HEURTEBISE's presentation in Appendix No. 3.*

**Gases.** Overspending in gases raised the question as to whether the Users should be charged for their specific needs in gases, to which was answered that this does not seem feasible as the ESRF Users Credit takes into account these expenses. Also, the stakeholder universities would be concerned that this is a way for SNBL to acquire funds outside the contract.

At this stage it was underlined that SNBL has a gas mixing system which should be made use of in order to reduce the price of mixed gases. Users should change their attitude towards gases.

The issue of gases should be considered when evaluating the proposals, and the user informed that spendings on gases should be carefully evaluated .

**Workshops.** SNBL should endeavour to have in the future a cost near zero.

Council approves continuing with Industrial Beamtime but only as long as the agreed percentage limits are strictly controlled.

Council recognises that the Norwegian side is not obligated to match EPFLs contribution to the salary of one of the beamline scientists. Future budgets must take this into account.

Since the budget had incorporated this nonobligatory contribution from Norway, there is a deficit that must be covered from within SNBL resources.

SNX Council has decided to cover the deficit from an earmarked item (CHF 52'639) in the reserve for 2009.

## 4.2. Income and Budget 2010

[C. Heurtebise/V.Dmitriev]

*Income 2010, see Appendix No. 3.*

*Budget 2010, see Vladimir DMITRIEV's presentation in Appendix No. 4.*

The points raised under this heading :

### - Maintenance and Running Expenses

Total amount CHF 290'000

SNX Council received a copy of that budget, it is CHF 45'000 in excess of the available amount.

- Income missing from "Outside baseline" for 2010. The amount from Industrial Beamtime 2009 is to be used to cover the missing income for 2010.

The SNBL Director stressed that the equipment on the beamlines is ageing and needs to be replaced. The shifts lost in Oct/Nov 2009 is partly due to this ageing problem. This should have been covered by Action11.5.1 (The Road Map) assigned to the Director and which is reissued here

**12.4.1. Establish a roadmap with timetable, costs, manpower, for work to be accomplished on the beamlines. Vladimir DMITRIEV – Deadline : May 2010. Roadmap/timetable/costs/manpower - to be approved by SNX Council**

Council stresses that spending is limited by the baseline budget.

### 12/2 SNX RESOLUTION.

**12.4.2. The beamline team led by the Director is invited to submit economic models that satisfy the needs of CH and N users over the next 4-year period (2012-2015) to be covered by a new contract. This contract will have fixed resources that will not be increased over the contract's lifetime. Therefore, it is important that the model is realistic and does not depend on outside-contract contributions; This request/estimate is to be submitted to SNX by May 2010. Vladimir DMITRIEV. Deadline May 2010**

The Norwegian side is not in a position to find the outside baseline funds that were expected for 2008 and 2009 which seems to be also the case for 2010, 2011. This budget item is nonobligatory for the Norwegian side (see above).

In Attendance: SNX Council, SNX Secretary, Observers from RCN and SER, BL Scientists.

## 5. Status of the SNBL operations

### 5.1. Beamline A: Operations

[P. Pattison]

*See Philip Pattison's presentation in Appendix No. 5.*

As a general comment on beamtime requests, there is an oversubscription in proposals for beamtime reserved for ESRF users.

In 2009 to date, 127 publications coming from SNBL. Six publications are in the best journals.

### Developments in "extreme conditions"

- 1) High pressure – Diamond Anvil Cells
- 2) Low temperature – Helium cryostat 5 K – 300 K

The high pressure diamond anvil cell equipment, which is on loan from the ETHZ (Prof. W. Steurer group) is valued at CHF250 000.

### Development/improvements

- Beamline automation / scanning / alignment

- Computer and instrument control (heating / cooling / spectroscopy / pressure etc)
- Development of improved software tools for data analysis (diffuse scattering, reconstruction, profile integration)

#### Education and Training

Student visitors : Ingum Cecilie Oddsen from the University of Stavenger, and a student from the University of Siegen, Germany.

Trainings : 2 persons from MaXLab beginning of 2010 (Jeppe Christensen and Dörthe Haase).

User Training : Group from Neuchatel and EMPA for gas-mixing rig and in-situ Raman.

#### Recommendations of the COF

- Installation of a new state-of-the-art large-area X-ray detector - In progress, discussed under Detector Upgrade.
- Replacement of the current point detector by a modern pixel detector, not yet done, but under progress (Oxford Diffraction)
- Full implementation of SPEC beam line control system - In progress.
- SNX will make the final decision concerning a full mode operation of the KM6 later.
- Efforts to deliver good and reliable working conditions at 10K have been completed.

#### Long-terms planning – road map for the future

- Preparation for detector upgrade to Pilatus 2M
- Full automation of beamline controls
- Develop a strategy for improved changeover between different experiments

#### Detector upgrade

Purchase of Pilatus 2M detector. The quotation for the detector has been received.

Design and manufacture of detector mount and miniature kappa-diffractometer is in progress.

Design and manufacture of miniature kappa-goniometer

#### Timescale for detector upgrade

The goal is to make the installation during the ESRF shutdown (Aug-Dec 2011).

- Jan- July 2010 : Specification and preparation of design study (cost around CHF 25'000).
- Summer 2010 : Place order for Pilatus 2M
- Aug – Dec 2010 : Place orders for detector mount and goniometer
- Summer 2011 : Take delivery of detector, detector mount and goniometer
- Aug – Dec 2011 : Installation and testing during ESRF shut-down.

#### **Pilatus 2M.**

The Norwegian side stated that the proposal has first to be submitted to the Research Council of Norway before committing spendings on that PILATUS. The result of this process should be forthcoming towards the end of 2010. The Norwegian side will inform SNF of the time schedule on the Norwegian side.

**12.5.1.** The pdf file confirming the grant allocation received from the Swiss National Science by Prof. W. Steurer is to be sent by the SNBL Director to David NICHOLSON and to Aase Marie HUNDERE. **Vladimir DMITRIEV. Deadline January 2010.**

Aase Marie HUNDERE will release the date of the next call from RCN once this is know.

SNBL is planning a design study, and the amount needed (~CHF 25'000) is not part of the budget.

The KUMA will not change as a result of the Pilatus2M detector upgrade.

## **5.2. Beamline B: Operation**

**[H. Emerich]**

See Hermann EMERICH's presentation in *Appendix No. 6*.

Recent setbacks. Two or 3 experiments had to be cancelled, for the first time since the beginning of the running of the beamlines.

The six months ESRF shutdown will take place in one and a half years. SNX has to decide now how to take this opportunity to improve the beam lines.

Situation.

Recent changes in the monochromator crystals have improved the data quality but further improvements are possible. To do so, we badly need :

- Pre-mono mirrors
- Post-mono mirrors
- Improvements in sample preparation. Preparation of good samples are necessary, SNBL should help the users in that sense

Regarding sample preparation, the following acquisitions are envisaged :

- Ball Mill
- Ultrasound transducer
- Dedicated Pellet Press
- Precision Weight
- Set of Dies (plus Die-stock), mortars, sample supports etc.

Long term strategy.

### **Collimating Pre-Mono Mirrors**

- For better harmonic suppression
- To increase the flux (around four times) without degradation of the resolution
- To increase the reliability of the monochromator by protecting the seals
- Preparing for higher heat-load on mono (ring current of 300mA or more)

### **Post-Mono Mirror(s)**

- Harmonic suppression
- The present detuning of the monochromator provokes inhomogeneities in the beam profile (degrading the data quality). This can be avoided by the use of mirrors allowing to sit on top of the rocking curve.
- Deflecting one of the two beams sideways for the full implementation of simultaneous PD/Xafs experiments
- Focusing

## Additional possibilities due to beam focusing

### A) Vertical Focusing

- Beam sweeping for better averaging across the sample
- Selection of the “most uniform” sample region
- Avoiding “artefacts” induced by measuring Exafs on (round) capillaries
- To boost the beam intensity → Quick(er) Exafs

### B) Horizontal Deflection and Focusing

- For a full integration of simultaneous Exafs and PD measurements we will have to deviate one of our beams to make both coincide on the sample spot
- To deviate one beam sideways a set of several mirrors aligned in a row could be used
- If these mirrors were made bendable this would allow to sweep not only for averaging but also for left/right “Sample Analysis”

### C) Spot Focusing ( $\geq 15\mu\text{m}$ )

- Investigation of small samples and sample regions
- High pressure Exafs in DAC's ??
- Use of analyzers for fluorescence analysis becomes possible (with hardly any additional cost)

In the following slides, a comparison of Exafs data measured at SNBL with respect to other Exafs beamlines was given

### Summary

Hermann Emerich stressed that there is little time left, since the ESRF shutdown is only 1-½ year away from now. It would be useful to know whether the SNX Committee supports starting spending time and money on these improvements given that they can only be realized if a substantial contribution of additional funds outside the normal budget is made.

PRE-MONO mirror. The problem is the room available on the beamline. One Member of the EXAFS commission wondered whether we could have a trainee, who could look into this issue. The cost would be around EUR 1000. The SNX Council approved this spending, provided that this amount is taken from the Budget.

Jeroen VAN BOKHOVEN stressed that the priority is as follows:

Pre- and post-mono mirrors are both essential for future optimal operation of the station. The pre-mirror should get priority in terms of time line of construction.

The main benefit SNBL will get from the ESRF Upgrade is more space. Hermann EMERICH presented the roadmap for a future mirror system as follows:

- Preliminary design work and cost evaluation.
- Modification of the beamlines (optics enclosure) to create the necessary space during the ESRF shutdown.
- Construction/acquisition and installation of the mirrors plus their respective vessels once the necessary additional funding becomes available.

SNX supports the work in improving the B line, however the request for funds needed during the ESRF upgrade should be included in the next four-year contract (2012-2015).

## 5.3 Exafs Commission Report

See Exafs Commission report in *appendix No. 7*.



The Chairman of the Commission, Jeroen VAN BOKHOVEN, reported that the Commission is very satisfied with Hermann Emerich's work in solving the technical problems. The Commission gives a high priority to the acquisition and installation of a mirror system, which is essential for optimal data quality and for future operation of the beamline to deal with the increased flux due to the ESRF upgrade. The committee considers the presented vacuum problems as a temporary problem.

The ESRF Upgrade is a convenient timetime to perform the changes.

The Commission concluded that the data quality at BM1B has significantly improved. If further commissioning of a new mono crystals remains successful, BM1B can certainly compete with other beamlines in terms of data quality and make a difference in having its unique feature of providing combined experiments and providing optimized infrastructure.

SNX thanked Hermann EMERICH for his endeavours in improving the beamline.

In Attendance: SNX Council, SNX Secretary, Observers from RCN and SER. Check attendance

## **6. Proposed new system for rating beamtime applications** [D. Nicholson]

*See the Guidelines for Grading Applications for beamtime in Appendix No. 8.*

It was agreed to have the suggested guidelines separated into two parts :

- Evaluation of Beamtime, which corresponds to the second part of the guidelines
- Assessment Committee, which corresponds to the first part of the guidelines.

Discussion, see appendix *SNX Delegates/Members*.

## **7. Any other business** [D. Nicholson]

### **7.1. MoU MAXLAB**

All the members got a copy of the MoU MaXLab. The MoU is approved by SNX council. The document is available on SNBL web site.

### **7.2. Proposal Pilatus 2M**

This point has already been dealt with under point 5.1. Beamline A : Operations.

### **7.3. Any other business**

Frode MO is retiring from the SLS evaluation panel. SNX nominates Ragnvald MATHIESEN.

Christoph QUITMANN of SLS stressed that Frode MO carried out his task to the full satisfaction of the committee. Rangvald MATHIESEN will be recommended to SLS as the SNX replacement for Frode Mo.

In Attendance: SNX Council, Beamline Scientists, SNX Secretary.

## **8. Discussion of Proposals** [Shepherds]

### **8.1 Evaluation of Proposals**

*Requests and Allocations of Beamtime on BM 1 A and BM 1 B, see Appendix No.9.*

**BM1 A**

Total Number of shifts available		205
Shifts for ESRF	- 69	
Shifts available for scheduling		136
Long Term	- 12	
Backlog due to technical failure on BL	- 12	
Shifts available for discussion		112
Total Shifts requested by users :	233	

**All proposals with Grade B+ and over will receive beamtime.**

**BM1 B**

Total Number of shifts available		205
Shifts for ESRF	- 69	
Shifts available for scheduling		136
Long Term	- 24	
Shifts available		112
Backlog approved		
01-01-814 – Tsyarkin (15)		
01-01-811 - Nicholson (9 (out of the 15)		
HS 4009 - Bortolotti (6)	- 30	
Shifts available for discussion		82
Total Shifts requested by users :	123	

**All the proposals with Grade B+ and over will get beamtime.**

**8.2. Assessment Committee**

Concerning the evaluation of proposals, the following new procedure is approved by the Council:

The SNX Council nominates a Beamtime Assessment Committee that comprises the six SNX delegates.

The Assessment Committee's process of evaluating proposals is separated into two parts:

1. In the first part of the evaluation the two Beamline Scientists are present in order to answer questions relating to their written comments on technical feasibility and the number of shifts necessary.
2. In the second part, the Assessment Committee takes the technical evaluations into consideration and discusses the scientific merits and other factors. Decisions are made in the light of these considerations.

SNBL should note that the Assessment Committee wants the written technical evaluations from the Beamline Scientists and any other pertinent documents to be sent to the Committee at least two weeks prior to the SNX meeting. Further, these evaluations should have the same format. (The Chairman will send a template to SNBL.) This to take effect for the next evaluation period.

See discussion in *Appendix SNX Delegates/Members*.

## 12/3 SNX RESOLUTION

General comments :

- Council notes that requests for additional funding are presented over the table to Council also in a piecemeal manner with no coordination. Council requires that requests for money for specific projects must be presented in a single document with clear priorities.
- Budget – a unified document which shows and explains the differences between income and spending
- Income: SNX Members must have better documentation.

## 9. Summary of actions to be taken

[C. Heurtebise]

**12.1.1. Dates of the ESRF Upgrade to be communicated to the SNX Members so as to plan the costs for moving to new offices, workshop, plus new cabin in experimental hall (total estimation EUR 109'000). Vladimir DMITRIEV. Deadline May 2010.**

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## 10. Concluding remarks

[D. Nicholson]

- The 13th SNX Meeting will take place on Thursday 27th and Friday 28th May 2010, in Tromsø. Aase Marie HUNDERE to organize the booking of a meeting room and hotel rooms.
- 14th SNX Meeting will take place in La Gruyère, Switzerland, on Wednesday 1st and Thursday 2nd December 2010. Organization : Gervais CHAPUIS.

The Director and staff were thanked for the presentations and the work carried out.

The Director, on behalf of the staff, appreciates the input and guidance from SNX and assured the Council that “*We are ready to work to solve the problems mentioned during the meeting*”.

**List of appendices, showing the page number on which they appear in the minutes.**

**Appendix A are available only to SNX Members and Observers**

**Appendix B are available to all.**

**Appendix SNX Delegates / Members**

**Appendix RESOLUTIONS 12/1, 12/2, 12/3**

Appendix No. 1. B	P. 2	Approved Agenda
Appendix No. 2. B	P.4	Report of the SNX Director
Appendix No. 3. A	P. 5	Income and Spending 2009
" " "	P. 6	Income 2010
Appendix No. 4. A	P. 6	Budget 2010
Appendix No. 5. B	P. 6	Beamline A: Operations
Appendix No. 6. B	P. 8	Beamline B: Operations
Appendix No. 7. A	P. 9	Exafs Commission Report
Appendix No. 8. A	P. 10	Guidelines for Grading Applications for beamtime
Appendix No. 9. B	P. 10	Requests and Allocations of Beamtime on BM1A and BM1B