

**Cooperation Agreement
for the construction of neutron instrumentation**

This Cooperation Agreement (hereinafter referred to as the "Agreement") is entered into by and between:

The **COMMISSARIAT À L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES**, a French state-owned research entity with a scientific, technical or industrial activity duly organised under the laws of France and having its registered office located Bâtiment Le Ponant D - 25 rue Leblanc à Paris 15^{ème} (France) – and declared at the Paris Register of Commerce and Trade ("Régistre du Commerce et des Sociétés de Paris") under the following registration number : RCS Paris B 775 685 019, represented by its Administrateur Général, Mr. Bernard Bigot,

hereinafter referred to as "**CEA**",

and

The **CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE**, a public institution of scientific and technological value, having its registered office located 3, rue Michel Ange, 75794 Paris Cedex 16, represented by its President, Mr. Alain FUCHS, who has delegated Mr. Joël BERTRAND for the purpose thereof, acting as Director General for science,

hereinafter referred to as "**CNRS**",

CNRS and CEA acting in their own names and in the name and on behalf of the "Laboratoire Léon Brillouin", a joint research unit of CNRS and CEA (UMR 12), located at CEA/Saclay, 91191 GIF-SUR-YVETTE Cedex, headed by Mrs Christiane Alba-Simionesco, hereinafter referred to as "TGI LLB/Orphée",

CNRS and CEA being hereinafter referred collectively to as "the Institutions",

on the one hand,

and

SWEDISH RESEARCH COUNCIL a governmental agency for funding basic research of highest quality, having its registered office located at Klarabergsvägen 82, 111 64 Stockholm, represented by the Director General Pär Omling,

hereinafter referred to as "**VR**",

on the other hand,

the Institutions and VR being hereinafter referred collectively to as the "Parties" and individually to as "Party",

PREAMBLE

WHEREAS:

- The Ministry of Education and Research (MER) of the Kingdom of Sweden and the *ministère de l'enseignement supérieur et de la recherche* (MESR) of the French Republic have concluded on September 1st, 2010, a common Declaration of Intent concerning Swedish-French Cooperation in neutron research, accelerator technology and climate research (hereinafter the "Declaration") under which they agree to foster their respective concerned national research organisations (including the Institutions) to set up specific arrangements aiming to describe the objectives and modalities of such cooperation;
- The TGI LLB/Orphée is a joint research unit created between the Institutions and the French national neutron source using the neutrons produced by the research reactor ORPHEE. Its missions are to promote the use of diffraction and neutron spectroscopy, to welcome and assist experimentalists and to do research on its own scientific programs. The TGI LLB/Orphée provides access to the French and international communities; it is a part of the European network and is involved in the NMI3 project under the Seventh Framework Programme of the European Communities Commission. The TGI LLB/Orphée is a leading hub for neutron scattering at the national and European levels. The TGI LLB/Orphée benefits from the brilliant scientific environment provided by the research Campus in Saclay, including the synchrotron source SOLEIL and many renowned Universities, research centres and engineering schools;
- VR is a governmental agency that provides funding to Swedish universities and institutions for basic research of the highest scientific quality. In the field of neutron scattering it funds Swedish partnership in international neutron sources, neutron instrumentation development and project grants to individual researchers. VR aims to promote and enhance the role of the Swedish scientific community in neutron methodologies;
- In order to strengthen neutron user communities, VR and the Institutions have a common interest in enhancing the cooperation between neutron scattering communities of Sweden and France in training and education in neutron methods and the development of various technologies which will support the operation of their neutron user facilities, in particular two types of instruments which have been recognized as the most important, modern Time-of-Flight spectrometer and Small Angle Neutron Scattering instruments that will be built and operated at latest in 2016 at the TGI LLB/Orphée;
- ESS AB is a state owned limited liability company, that will lead the design and the construction of the European Spallation Source (ESS) to be built in Lund, Sweden and is preparing the detailed planning (including the definition of neutron instruments) of ESS layout and construction in a multinational cooperation;
- Considering the common interest of the Parties, ESS AB and other neutron user communities shall enjoy certain user rights and benefits as regards the results of the development of the two types of instruments above mentioned;
- In consideration of the Declaration and the assignments received from their research ministry, the Parties have agreed to set up under this agreement the terms under which they shall cooperate in the mutually beneficial development of such neutron instrumentation to strengthen neutron user communities;

IT IS THEREFORE AGREED AS FOLLOWS:

ARTICLE 1 – Purpose

The purpose of the Agreement is to define the framework under which the Parties shall cooperate to the development of instrumentation in the domain of Time-of-Flight (ToF) and Small Angle Neutron Scattering (SANS) techniques which aims to the construction and utilization of the instruments at the latest in 2016 at the TGI LLB/Orphée, hereinafter referred to "the Programme", which will be operated at the TGI LLB/Orphée. A further purpose is that the information regarding the development of the instrumentation (including drawings and measurements) shall be made available to ESS AB so as to enable ESS AB to use the information, including duplication of the instruments or parts thereof at the ESS facility.

The description of the Programme, including notably the main features of the instruments to be constructed, hereinafter referred to as the "Instruments", the duration, the estimated time schedule and the estimated manpower means, is detailed in Exhibit 1 hereto.

ARTICLE 2 – Parties responsibilities

2.1 Institutions' responsibilities

The Institutions shall assume the responsibility of the design, construction and test of the Instruments in the facilities of the TGI LLB/Orphée at CEA's premises of Saclay (CEA/Saclay). Subject to the provision of this Agreement, the Institutions shall define, through the LLB CEA-CNRS Steering Committee, their common use of the Swedish contribution which will be precised in a specific contract describing the LLB activities related to the Programme.

In their capacity as master builder and host laboratory of the Instruments, the Institutions shall in addition to their responsibilities defined in this Agreement, including the daily management of the execution of the Programme, provide the technical and scientific manpower, the funding of part of the equipments and on an as-available basis the services and facilities necessary to perform the Programme. These include inter alia network connections, floor, office and storage space, assistance with the installation and removal of equipment, computing resources, transport services, access to its safety, administrative as well as purchasing services, local infrastructure for the supply of mains electricity, raw cooling water, standard connections to the neutron source reactor "Orphée".

The Institutions will provide opportunities for participation of engineers and researchers from Swedish universities and institutions in the technical design and construction of the Instruments and in software developed for, and opportunities for training and education (e.g. summer schools), sample preparation and access to the facilities by scientists from Sweden, including long term proposals related to PhD projects.

The financial contribution of VR allocated to the Programme according to article 2.2 will be managed by CEA on behalf of the Institutions.

2.2 VR's responsibilities

VR will contribute to the implementation of the Programme by providing the Institutions with a financial contribution of a total amount of fourteen millions (14 000 000) euro, 2010 economical conditions, during the 2011-2016 years. This financial contribution of the VR is considered by the Institution as external resources of the LLB and is managed by the Institutions according to. This financial contribution of the VR may be used by the Institutions

to take in charge the remuneration of the staff involved in the implementation of the Programme and located at Saclay.

VR will provide suggestions for Swedish engineers and scientists that can be involved in the implementation of the Programme and experts for advisory and beam time review panels. VR will also advertise the opportunities to use the facilities at TGI LLB/Orphée for research.

The VR financial contribution for each year and each Instrument shall be paid to CEA at the beginning of each year according to the breakdown set forth in Exhibit 1. Every payment due by VR to CEA, in application of the provisions of the present Article 2.2, shall be made within thirty (30) days from the reception of each CEA's invoice by VR.

2.3 Common responsibilities

All the Parties shall promote an active and enhanced French-Swedish cooperation in neutron research and related areas. This could include, but is not limited to joint workshops, teaching, summer schools, student exchange, advertising of joint opportunities in the construction and utilizing of neutron instrumentation etc.

ARTICLE 3 – Terms and conditions of execution of the Programme

3.1 The duration of the Programme is six (6) years as from the Effective Date as set forth in Article 11.1 below.

3.2 Each Party shall provide all necessary and reasonable endeavours and resources to ensure an efficient and faithful Cooperation and to perform and fulfil all of its obligations under this Agreement.

3.3 Each Party is responsible for the execution of the Programme tasks assigned to it (hereinafter referred to as “the Share of the Programme”).

Each Party undertakes to execute its Share of the Programme in accordance with the usual professional skills in the field. Each Party shall promptly inform the other Party via the Coordination Committee of any and all difficulties that it encounters in the execution of its Share of the Programme which are susceptible to jeopardise the purpose thereof.

The Parties shall provide at the end of each year the Coordination Committee with the financial report of their respective contribution

3.4 Each Party may subcontract to any third party part of its Share of the Programme when required for the proper execution of the Programme. Each Party shall be fully responsible for the execution of the part of its Share of the Programme which it subcontracts to a third party. In such a case, each Institution shall perform the procurement of the goods and services necessary to fulfil its obligations under the Agreement, under its responsibility and in accordance with its own procurement procedures and rules.

The corresponding subcontract must be drafted in terms, notably regarding confidentiality and intellectual property rights, compatible with those of the Agreement. Each Party undertakes, in its relationship with its subcontractors, to take all measures to acquire the intellectual property rights of the results generated by the subcontractors, in order not to limit the rights conferred to the other Party under this Agreement.

3.5 The Programme shall be performed in the facilities of TGI LLB/Orphée at CEA/Saclay.

ARTICLE 4 - Personnel

- 4.1 Staff Mobility actions may be carried out on a case-by-case basis depending on the laws, regulation and status applicable to each Party and shall require the conclusion of appropriate written agreements.

The Parties shall make the hiring of any personnel required for the administration and the implementation of the Collaboration their own business as well as their seconding to other Parties. It is noted that VR may designate personnel employed by ESS AB and/or Swedish universities or institutes for the implementation of the Programme, in which case VR take the necessary measures so that the employers of such personnel comply with the provisions of this Agreement.

In case of employee mobility under this Agreement, the employees of each Party shall keep up their original status; their organisation of affiliation shall keep up its duties as employer and pay and manage those employees pursuant to the applicable legislation and internal policies.

Each Party shall ensure the coverage of its employees in accordance with the national labour legislation relating to social security coverage, work-related accidents and occupational diseases and shall carry out all legal or regulatory requirements therefore.

- 4.2 The presence of personnel of one Party on the premises of another Party may be required for the implementation of the Programme. In such case and within the frame of this Agreement, employees of a Party working in the premises of another Party (hereinafter referred to as “the Host Party”) are required to comply with the internal policies as well as with all general or special rules of health, security and hygiene applicable in the premises of the Host Party and shall comply with all the instructions given by the manager of these premises or their nominated representatives. All such rules and regulations shall be drawn to the attention of such employees when accessing the premises.

Each of the Parties shall make the appropriate arrangements in connection with the hosting of third-party employees within the frame of this Agreement.

The Host Party agrees to inform the employer of any risk to which its employees may be exposed on the host premises.

The employer of seconded employees is required to be in a position to justify to the Host Party the compliance of the status of all of its employees under labour and employment law rules or under other rules applicable to them.

The personnel of the sending Party shall abide by the provisions relating to confidentiality and intellectual property of the Agreement.

ARTICLE 5 – Coordination Committee – Responsible Officers

5.1 Coordination Committee

- 5.1.1 A Coordination Committee shall be created and composed with representatives of the Parties to follow up the implementation of the Agreement. Within thirty (30) days after the Effective Date, each Party shall appoint two representatives therefore.

Each Party may replace any of its representatives after having informed in writing the other Parties.

- 5.1.2 The Coordination Committee shall meet at the request of one Party at least once a year and anytime as deemed necessary under notice no later than thirty (30) calendar days preceding the meeting. Whatever the circumstances, the Coordination Committee shall meet in case of significant difficulty likely to affect the carrying out of the Programme and the Agreement. In such a case, the meetings may also be held by teleconference or other telecommunication

means.

Depending on the topics to be discussed, the members of the Coordination Committee may be accompanied by experts and/or by the concerned Responsible Officers as set forth in Article 5.2 below.

Unless otherwise agreed between the Parties, the meetings shall take place in the premises of CEA hosting the TGI LLB/Orphée. The date, agenda and practical details of the meetings will be determined by mutual agreement by the Parties and sent by the Institution hosting the meeting no later than fifteen (15) calendar days before the meeting.

The chair and secretariat of the meeting shall be alternatively borne by a representative of the Institutions for a year. The drafting of the minutes of each meeting shall be under the responsibility of the chairperson and transmitted by him/her to the other representatives without delay.

The minutes of each meeting shall be considered as accepted by the other representatives and Party if, within fifteen (15) calendar days from receipt, the latter have not objected in writing to the chairperson.

5.1.3 The Coordination Committee shall, on behalf of the Parties, ensure that the Agreement is properly executed and implemented. In particular, it is responsible for:

- reviewing the progress of the Programme and the Agreement,
- review proposals for promoting an active and enhanced French-Swedish cooperation in neutron research and related areas,
- review proposals for engineers, post docs and young researchers from Sweden to participate in the development of the Instruments,
- review proposals for experts for advisory and beam time review panels,
- making proposals to the Parties in order to update or amend the Programme and the Agreement,
- settling any eventual disputes arising between the Parties in accordance with Article 12 below.

The Coordination Committee shall use the working principle to find the highest quality option for reasonable resources and to promote the French-Swedish long terms cooperation. It shall seek a consensus between the representatives of the Parties.

5.1.4 The Coordination Committee shall keep updated the financial contribution of the Parties in performing their respective Share of the Programme.

5.2 Responsible Officers

5.2.1 Each Party shall appoint a delegate to follow up the implementation of each specific workpackage of the Programme as identified in Exhibit 1 hereto (hereinafter referred to as "Responsible Officers").

The Parties shall notify each other the identity and contact addresses of their respective Responsible Officers.

Each Party may replace any of its representatives after having informed in writing the other Parties.

5.2.2 Each Responsible Officers shall assume specifically the follow up of the Share of the Programme assigned to the Party it represents under the specific workpackage. They shall

meet at any time when necessary at the request of one of them.

The Responsible Officers undertake to transmit to every member of the Coordination Committee within a reasonable delay before each meeting of the Coordination Committee, a written report dealing with the progress of the Programme. Such report shall, in particular, state any significant information, fact, problem or delay likely to affect the performance of the Programme and shall if necessary propose solutions in order to settle such matters.

ARTICLE 6 – Intellectual Property

6.1 Definitions

For the implementation of this Agreement, the following defined-terms shall have the following meaning:

“Intellectual Property” shall have the meaning defined in Article 2 of the Convention Establishing the World Intellectual Property Organization, done at Stockholm on July 14, 1967. For the purposes of this Agreement, Intellectual Property may include Confidential Information, as this term is defined under Article 8.1 below, such as know-how or trade secrets provided that such Confidential Information are unpublished, and in written or otherwise documented form, and

- a) have been held in confidence by its owner,
- b) are not generally known or available to the public from other sources, and/or are not generally available to the public in printed publications and/or other readable documents,
- c) have not been made available by its owner to other Party without an obligation concerning confidentiality, and
- d) are not available to the recipient without an obligation concerning confidentiality.

“Background Intellectual Property” (or “Background”) shall mean Intellectual Property that has been or is acquired, developed or produced, before the entry into force of this Agreement, or outside of the scope of it.

“Generated Intellectual Property” (or “Foreground”) shall mean Intellectual Property that is generated or acquired with full ownership by one or several Parties pursuant to and in the course of the performance of this Agreement.

For the proper understanding of the provisions of the present article and article 7 under this Agreement, the term “Party” shall also apply to ESS AB or the Swedish universities or institutes which personnel has been designated by VR for the implementation of the Programme according to the provision of article 4.1 above.

6.2 General principles

Unless otherwise agreed in writing among the Parties, the following shall apply:

- a) any Background owned or acquired by a Party shall remain the entire property of such Party;
- b) Foreground generated by the employees of a Party pursuant to this Agreement shall be the exclusive property of that Party.

Such Party shall be free to decide whether or not, all or part of such Foreground shall be protected, under its name and at its own charge and benefit, by any appropriate intellectual

property right title, and in particular by patents. Each Party shall inform the other Party as soon as it has filed an application for patent regarding such Foreground;

- c) Foreground generated by the employees of both Parties pursuant to this Agreement shall be the joint ownership of the Parties (hereinafter referred to as the "Co-owners") to the extent that none of the Parties could reasonably claim full ownership of this Foreground. The common Foreground shall be owned equally by the Co-Owners.
- d) Foreground jointly owned, if any, shall be subject to a case-by-case written agreement of the Parties on the share of property to be assigned to each Co-owner, the modalities to jointly apply to obtain and/or maintain the relevant Intellectual Property rights, the related financial provisions and the rights of use and exploitation;
- e) it is agreed among the Parties that this Agreement does not imply for the benefit of the other Party any transfer nor any license grant of Intellectual Property rights of a Party, unless otherwise stated herein.

6.3 Property of the Instruments

The Instruments shall be the joint property of the Institutions.

ARTICLE 7 – Right of use of Background and Foreground

7.1 For the performance of the Programme

Each Party shall enjoy royalty-free access rights to the Background and Foreground of the other Party if needed for the execution of its Share of the Programme under this Agreement; request for such access right shall be made in writing and shall clearly specify the purpose for which such access right is needed.

In particular, where the Background consists of software, the Party receiving it shall use it exclusively on its own equipment, and shall only be authorised to reproduce it only in as far as is strictly required for the loading, display, execution, transmission and storage of this software and solely for the purpose of executing its Share of the programme, as well as to make a backup copy.

The Party receiving such software shall not make any other use of it, particularly it shall not loan or disclose it to third parties or exploit it in any other way, unless otherwise previously authorised in writing by the owning Party.

The right to use software granted hereabove does not include access to its source codes unless previously authorised in writing by the owning Party.

7.2 For own research purposes outside the scope of the Programme

Each Party will have rights to use, free of charge, of the Foreground of the other Party for its own research purposes in the field of the cooperation in its own country without any restriction or need of further consent from the other Party, except for any activity of industrial or commercial interest.

For the present paragraph, Party is understood to mean, on the one hand, CEA and CNRS and research and development laboratories to which CEA and CNRS entrust the execution of all or part of their research program and, on the other, VR and ESS AB as well as research and development laboratories to which VR and/or ESS AB entrust the execution of all or part of their research programs.

ARTICLE 8 – Confidentiality

8.1 All information in whatever form or mode of transmission, including Background and Foreground, which is disclosed by a Party (the “Disclosing Party”) to any other Party (the “Recipient”) in connection with the Programme under the Agreement must be considered as confidential information (the “Confidential Information”) by the Recipient, as far as possible under the public law under which the Recipient operates.

8.2 Subject to Clause 8.1, the Recipient hereby undertakes in addition regarding Confidential Information received from the Disclosing Party, for a period of five (5) years after the end of this Agreement:

- not to use Confidential Information otherwise than for the purpose for which it was disclosed;
- not to disclose Confidential Information to any third party, including subcontractor, without the prior written consent by the Disclosing Party;
- to ensure that internal distribution of Confidential Information by a Recipient shall take place on a strict need-to-know basis; and
- to return to the Disclosing Party upon request all Confidential Information which has been supplied to or acquired by the Recipients including all copies thereof and to delete all information stored in a machine readable form. If needed for the recording of on-going obligations, the Recipients may however request to keep an archive copy.

The Recipient shall be responsible for the fulfilment of the above obligations on the part of its employees and shall ensure that its employees remain so obliged, as far as legally possible, during and after the end of this Agreement and/or after the termination of employment.

8.3 The Recipient shall not be liable for disclosure or use of Confidential Information, if and in so far as the Recipient can show that:

- the Confidential Information becomes publicly available by means other than a breach of the Recipient’s confidentiality obligations;
- the Disclosing Party subsequently informs the Recipient that the Confidential Information is no longer confidential;
- the Confidential Information is communicated to the Recipient without any obligation of confidence by a third party who is apparently in lawful possession thereof and under no obligation of confidence to the Disclosing Party;
- the Confidential Information, at any time, was developed by the Recipient completely independently of any such disclosure by the Disclosing Party;
- the Confidential Information was already known to the Recipient prior to disclosure;
- the disclosure of the Confidential Information has been required by the application of a legal or regulatory provision or within a judicial, administrative or arbitration procedure. In such a case, the disclosure of Confidential Information must be limited to what is strictly necessary. The Recipient undertakes to notify the Disclosing Party prior to any such disclosure in order to comply with the appropriate instructions given by the Disclosing Party to preserve the confidentiality of the Confidential Information.

8.4 The Recipient shall apply the same degree of care with regard to the Confidential Information disclosed within the scope of the Programme as with its own confidential and/or proprietary information, but in no case less than reasonable care.

Each Party shall promptly advise the other Party in writing of any unauthorised disclosure, misappropriation or misuse by any person of Confidential Information as soon as practicable after it becomes aware of such unauthorised disclosure, misappropriation or misuse.

ARTICLE 9 – Publication and communication

A Party intending to make any publication or communication, such press release, related to the existence of the Agreement and/or the Foreground jointly owned by the Parties (hereinafter referred to as the “Publishing Party”) shall seek written consent from the other Party. The Publishing Party shall furnish the other Party a copy of such proposed publication or communication and the other Party shall within thirty (30) days from receipt of the proposed publication or communication forward its written objections to the Publishing Party if it determines that its Confidential Information or patentable subject matter may be disclosed and wishes to modify it or to postpone the proposed publication or communication if needed by real and serious causes. Such postponement shall in no event exceed eighteen (18) months from the date of receipt of such objection except if the concerned information is of an industrial and commercial interest.

If no written objection is received within the stipulated period of time, the Publishing Party shall be free to proceed with the publication or communication. Each information communication or publication shall reference to the present cooperation between the Parties.

ARTICLE 10 – Liability

10.1 General principles

Subject to the below limitations, each Party agrees to assume all of the financial consequences of its liability in all cases its liability is asserted on the basis of damage caused to another Party or a third party during the implementation of this Agreement.

10.2 No warranty

Information provided by either Party under this Agreement shall be accurate, complete and suitable to the best of that Party's knowledge and belief but no warranty or representation of any kind is made, given or implied as to the sufficiency or fitness for purpose neither of any information or materials supplied under the Agreement or any Foreground or Background nor as to the absence of any infringement of any proprietary rights of third parties.

The Recipient (as this term is defined in Article 8 above) shall be in all cases entirely and solely liable for the use to which it puts such information and/or material, Foreground and/or Background.

Subject to Article 8.1, each Recipient hereby agrees to indemnify the other Party against claim made by any person arising from the use of such information (including claims relating to the infringement of patent rights) by itself or by any person to whom it discloses such information.

10.3 Liability towards each other

No Party shall be liable to any other Party for punitive damages, indirect or consequential loss or similar damages such as, but not limited to, loss of profits, loss of revenue or loss of contracts.

The terms of this Agreement shall not be construed to amend or limit any statutory liability.

10.3.1 Liability for accident: Personal damages to the staff of each Party

Each Party is liable, in accordance with the applicable law, for damages caused by its staff to the staff of the other Party except in cases of deliberate misconduct, willful act or default of one of the staff members involved that's detachable from its functions and/or role in the frame of this Agreement.

10.3.2 Liability for accident: Damages to another Party's properties

Each Party will bear the liability without any right of claim against the other Party, except in cases of deliberate misconduct, for any damage to the properties of this Party resulting from or in the course of fulfillment of the Agreement.

10.4 Third party liability

Each Party remains liable, in accordance with the applicable legal regulations, for any loss, damage or injury to third parties resulting from the performance of its obligations under the Agreement.

However, the liability of one Party will be substituted for that of the other insofar as that Party will exercise control over the staff of the other Party.

Each Party shall remain fully liable for the performance of any part of its Share of the Programme even when executed by a subcontractor or third party with whom it has therefore concluded a subcontract or an agreement.

To that end, such Party shall ensure that such subcontract or agreement fully complies with (i) the requirements of the Agreement and (ii) with the preservation of the other Parties' rights.

10.5 Nuclear civil liability

A Party being a Nuclear Operator shall be solely liable for any damage of any nature caused by a nuclear incident or accident as it is defined in the Convention of Paris of July 29th, 1960 on Nuclear third party liability and its subsequent modifying protocol.

Each Party agrees to indemnify such Nuclear Operator in respect of liabilities arising from claim of third parties resulting from a nuclear incident or accident under this Agreement in which such Party's liability is asserted.

Each Party shall comply with the foregoing requirements by providing financial protection through governmental indemnities, private insurance, or both, in sufficient amounts in accordance with the relevant applicable laws.

Such insurance or equivalent financial protection shall contain an unqualified waiver of rights of recourse against the other Party and staff regardless of any fault of any degree whatsoever, for damage in connection with any nuclear incident arising out of or resulting from the performance of this Agreement.

10.6 Force majeure event

No liability shall be incurred by a Party which is unable to perform its obligations under this Agreement due to events or circumstances of force majeure as defined under French law. The Party affected by such events or circumstances shall advise the others as soon as practicable of the same and when such events or circumstances no longer prevail.

In the event of a circumstance of force majeure which relieves a Party from the performance of its obligations under this Agreement, the Party claiming relief shall nevertheless use its reasonable endeavours to perform its obligations as soon as practicable.

In the event of force majeure which causes a delay in the performance of this Agreement then the time for performance shall be extended for a period equivalent to the period of force

majeure but not more than 6 weeks. If the circumstance of force majeure exceeds 6 weeks after advice of the other Parties, the Coordination Committee may decide the transfer to other Parties of tasks allocated to the Party affected by such event or circumstance.

ARTICLE 11– Entry into force, duration and termination

11.1 This Agreement shall enter into force upon signature by the authorized representatives of the Parties (hereto referred to as the "Effective Date") and shall remain in effect for a period of six (6) years.

Three (3) months before the termination date, the Parties shall consult each other in order to envisage the possible renewal of this Agreement for an additional period, by written amendment, notably if the Programme is not completed.

11.2 Apart from a force majeure event, each Party shall be entitled to terminate this Agreement or any of the Workpackages in the event that the other Party is in breach of its obligations hereunder. Termination shall become effective two months after the non-defaulting Party has sent a registered letter with acknowledgement of receipt giving the defaulting Party notice that it must fulfil its obligations, unless within that deadline the defaulting Party has fulfilled its obligations. The notice shall include a detailed description of the breach.

11.3 Notwithstanding termination of a Workpackage in accordance with Article 11.2 above, the other ongoing Workpackages shall continue to bind the Parties in application of the provisions of the Agreement, except where the breach also represents a breach of that Workpackages or adversely affects their execution.

11.4 Notwithstanding termination of this Agreement, the provisions of Articles 6, 7, 8, 9, 10 and 12 shall survive in so far and for as long as may be necessary to give effect to their respective rights and obligations accrued prior to termination.

ARTICLE 12 – Disputes - Arbitration

12.1 The Parties agree that any dispute arising out of the execution of this Agreement will be settled amicably if possible first through the Coordination Committee and then through the *Ministry of Education and Research* (MER) of the Kingdom of Sweden and the *ministère de l'enseignement supérieur et de la recherche* (MESR) of the French Republic, with assistance of one or more independent experts if necessary.

12.2 All disputes which cannot be settled between the Parties will be finally settled under the rules of conciliation and arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said rules. French law will be applicable and Paris (France) will be the place of arbitration. Procedures of arbitration shall be conducted in English.

ARTICLE 13 - Notices

All notices or other communications required or permitted to be given here above shall be in writing and shall be addressed as follows:

- If to the Institutions :

COMMISSARIAT à l'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES
/ Saclay
LLB - Bâtiment 125
91191 GIF-SUR-YVETTE CEDEX

France
Att. to Mrs C. Alba-Simionesco.

- If to VR

The Swedish Research Council,
Box 1035
S 101 38 Stockholm
Sweden
Att. To Secretary General Juni Palmgren

ARTICLE 14 - Miscellaneous

- 14.1 Nothing in this Agreement shall be interpreted as granting either Party the right or authority to make commitments of any kind for the other, implied or otherwise, without prior review and written agreement. This Agreement shall not constitute, create or in any way be interpreted as a joint venture, an agency nor any other kind of formal business grouping or legal entity having legal capacity between the Parties.
- 14.2 In the event that any or more of the provisions of this Agreement is held to be unenforceable under applicable law; (i) such unenforceability shall not affect any other provision of this Agreement; (ii) this Agreement shall not be construed as if said unenforceable provision had not been contained herein; and (iii) the Parties shall negotiate in good faith to replace the unenforceable provision with an enforceable provision which has an effect nearest to that of the provision being replaced.
- 14.3 This Agreement constitutes the entire understanding between the Parties concerning the subject matter hereof and supersedes all prior discussions, agreements and representations, whether oral or written and whether or not executed by the Parties. This Agreement or any part or provision hereof shall not be deemed waived, amended, or modified by either Party unless such waiver, amendment or modification is in writing and executed by authorized representatives of the Parties.
- 14.4 Neither this Agreement nor any right under this Agreement may be transferred, assigned or delegated by either Party without the prior written consent of the other Parties. Any attempted assignment, delegation or transfer shall be void.

ARTICLE 15 - Exhibit

This Agreement consists of this core text and the following Exhibit:

- Exhibit I: Description of the Programme.

In case of conflicts between the Appendix and the core text of this Agreement, the latter shall prevail.

ARTICLE 16 - Language

This Agreement is drawn up and executed in English, in three (3) originals, one for each Party.

In witness whereof the Parties hereto have caused this Agreement to be executed by their respective duly authorized representatives as of the Effective Date.

Delivered in Stockholm on the 13th of December 2010

For the Swedish Research Council

A handwritten signature in blue ink, appearing to read 'Pär Omling', with a large, stylized initial 'P'.

Pär Omling
Director General

Delivered in Stockholm on the 13th of December 2010

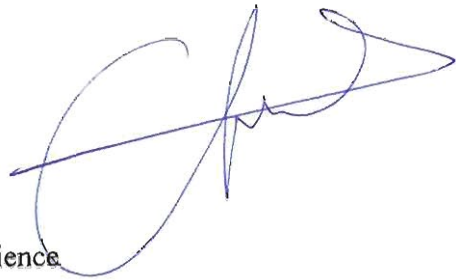
For the Commissariat à l'énergie atomique et aux énergies alternatives



Bernard Bigot
Administrateur Général

Delivered in Stockholm on the 13th of December 2010

For the Centre National de la Recherche Scientifique

A handwritten signature in blue ink, consisting of a large, stylized 'J' followed by a series of loops and a long horizontal stroke ending in a sharp point.

Joël Bertrand
Director General for science

represented by
Mrs C. Alba-Simionesco
Director of the TGI LLB/Orphée

Exhibit 1 – Description of the Programme

1 - Context

In the context of a redefinition of the neutron scattering landscape in Europe, with its future European Spallation Source (ESS), the TGI LLB/ORPHEE faces new challenges in instrumentation and upgrades with an ongoing program Cap2015 supported by an Instrumental Committee constituted of French and European experts. Two methods and instruments have been recognized as the most important for maintaining a science of excellence, the development of new scientific domains and the endorsement of innovative materials: Small-Angle Neutron Scattering and Time-of-Flight spectrometry. An 'instrument' refers to all equipments, including steering tools, necessary for the performance of a neutron scattering experiment of that type. Both types of instruments will provide the best performances on pulsed source such as the ESS; in the meanwhile it is therefore crucial to get staff expertise and prepare neutron user community to such an unprecedented performance.

2 – Description of the Programme

2.1 – Workpackage 1 : Small Angle Neutron Scattering Instrument

Small Angle Neutron Scattering (project SANS LLB) probes the structure of materials (solids, liquids, plastics ...) at the nanometer (10^{-9} m) to about the micrometer (10^{-7} m) scale. It is particularly powerful and inescapable in the studies of - complex systems, taking advantage of isotopic labeling and inherent contrast variation, - large-scale magnetic structures, due to specific interaction between neutron spin and magnetic induction and - material science studies thanks to high penetration depth of neutron radiation. The instruments developed jointly will focus on that technique in its last generation form, equipped with the most recent technology of neutron scattering and recent techniques of focusing including super-mirrors guides and focusing lenses. They will also improve considerably the efficiency of the scattering intensity measurement by using two large and very efficient multi-detectors covering in only one measurement a range of solid angles of almost 3 orders of magnitude, i.e. from 0.01nm^{-1} to 6nm^{-1} ; these detectors are constituted by 128 parallel and vertically oriented multi-tubes settled as a $64*64\text{cm}$ square made by electron discharge machining. Such a mechanics allows to use a high pressure of detection gas (^3He), leading to a high detection efficiency. The supply of ^3He will be a large part of the total cost and the choice of the suppliers will be discussed jointly. Because of the very large requested beam time in SANS at LLB (more than 30% of the overall requested beam time), these large multi-detectors will be also tested and adapted on existing spectrometers to cover all specific needs of research topics and be able to dedicate one or the other to specific applications from magnetism to biophysics.

The length of the new prototype, approximately $2*20\text{m}$, will make it possible to exploit both the flux and the resolution, and also to reach very small scattering vectors, at least 10^{-2}nm^{-1} (at 8\AA and 20m). The global increases, up to a factor 10, will be particularly appreciable to study the nanometer scale objects, but also larger objects (15 - 100 nm) observable only at small scattering vectors, where the scattering intensity is generally weak. SANS spectrometers are thought to prepare the SANS community for their future SANS experiments at the ESS-Lund. In addition to high detection efficiency, this new generation of large multi-detectors displays high counting rate capabilities. Such characteristic is peculiarly important for Time-of-Flight measurements; each pulse contains all the neutron wavelengths of the white beam and in addition to the localization of the scattered beam, this method must discriminate the time of flight of the various neutron

wavelengths. This method, rarely used for SANS measurements on steady reactors, will be the lone method on the future ESS. On the SANS instruments of LLB, we planned to propose two different resolutions: a high resolution (1-2%) to study precisely ordered structures and a low resolution (10%) to get “classical” SANS.

2.2 - Workpackage 2 :Time-of-Flight spectrometer Instrument

The **Time-of-Flight spectrometer** (project ToF FA#) is a unique tool for the study of the dynamics of materials. Cold neutrons show associated wavelength and energy of few Å and meV. These quantities are both in tune with the atomic distances and the energies of the dynamical modes at play in condensed matter. Kinetic energy exchange resulting from an inelastic scattering process within a sample induces a significant change in the neutron’s momentum, making this technique extremely sensitive to spatio-temporal changes. Time-of-Flight neutron scattering is therefore a perfect spectroscopic probe to reveal simultaneously the structural and dynamical phenomena (vibrational, rotational, diffusional and magnetic excitations...) in a vast variety of complex systems: atomic and molecular liquids, polymer, proteins, metals and glasses. On top of that, isotopic effects and/or polarisation of the neutron beam make it also possible to discriminate between collective or individual phenomena.

The ToF instrument FA# will be a high-resolution, direct-geometry, inelastic crystal spectrometer designed to provide full flexibility in the choice of energy resolution and to perform best at low-incident energies (2–150 meV) on an extended Q range from 0.05 to 10 Å⁻¹, with an energy resolution between 10 and 500 µeV. The versatility of this world class instrument will make it possible to tackle all the fields of Science where probing inelastic phenomena at atomic scale is relevant: solid state physics, polymers, magnetism, chemistry, biology and health science.

In order to accommodate high magnetic fields (15 Tesla) all the components of the spectrometer will be nonmagnetic. Variable Guide/Monochromator and Monochromator/Sample distances make of Fa# a hybrid instrument capable of switching from *time* to *monochromatic* focusing. This will be a key feature to reach the best flux vs. resolution balance, while accommodating the Bose population factor in experimental situations as different as, fundamental magnetism related studies in the mK range and material oriented research conducted at temperatures up to a thousand Kelvin.

Among the different available technologies, the design of ToF Fa# has been fully oriented to maximize the neutron counting rate. This can be achieved by a combination of the most advanced neutron optics and detection equipments:

- a high surface supper mirror (m=3) neutron guide fully dedicated to the instrument.
- a set of doubly focusing (both vertical and horizontal) monochromators.
- a short flight path from sample to detector to maximize the detection solid angle (1.7 st).
- ³He detectors at high pressure (10 bars) to maximise the detection efficiency of neutron scattered with high energy (routine detection up to 150 meV).

Further methods to enhance the neutron flux will be explored, for example technical design of elliptical or S-shape guides, provided that the instrument is delivered and operational at least in 2016.

All together this set of technical choices will result in a gain of more than 2 orders of magnitude in counting rate (10⁶ neutron/cm²/s) bringing ToF Fa# at the first level of the international competition so as to challenge the best ToF spectrometer currently on line at the Institut Laue-Langevin. Thanks to a generous 150 m² area reserved in the LLB guide hall, this generous counting rate gain will come along with an extended set of geometrical configurations

(take-off angles) making it possible to tune the energy instrumental resolution in the range 10 μeV to 0.5 meV.

2.3 - Workpackage 3 : training and education in neutron methods

The fields of co-operation are the following: the development of methods and technologies for neutron instrumentation and the promotion of neutron user communities from both sides. For the latter, the TGI LLB/Orphée will help in training and education through research and technical development ; it involves annual organization of summer schools, participation to its own training as well, called « les FANS du LLB », lectures on neutron scattering techniques along with practical works offered to students, depending on their research field. The purpose is to offer them a panorama of the instruments used in a specific scientific domain. This training session could be latter validated by their respective universities. Training will also involve sample preparation and any help for the access to other facilities. PhD programmes based on common scientific interests could be implemented with the Swedish universities and institutions.

2.4 - Workpackage 4 : accession to the TGI LLB-ORPHEE Facility for research

The Coordination Committee will welcome the suggestions of the VR for any technical and scientific Swedish staff involved in the implementation of the Programme at the TGI LLB/Orphée provided their expertise in the technical and scientific domains. The access to the facility should obey the rules defined by the Steering Committee of the TGI LLB/Orphée and its validation through beam time review panels meeting twice a year, since no *in-house* beam time is available. According to their scientific expertise, Experts nominated by VR could become members of the beam time review panels, which are renewed every three years according to the TGI LLB-ORPHEE Facility rules. A special attention will be devoted to long term proposals accompanying common PhD programmes.

3 – Estimated time schedule

From the beginning of 2009, the TGI LLB-ORPHEE progressively introduces project management tools and techniques in the realisation of projects executed within the roadmap “Cap2015”. Typical development phases of a project are: a Project initiation stage, a Project planning or design stage, a Project execution or production stage, a Project monitoring and controlling systems, and a Project completion stage. The roadmap includes at the moment nine neutron instrumentation projects of different level of complexity and readiness. The project ToF Fa# and SANS LLB which are at the centre of the present Exhibit can be situated at the following stages: SANS LLB has been successfully conducted through the *initiation phase* and is now at the stage of *Project planning (design stage)* with delivery of the instrument expected in 2013-2015. ToF Fa# is still in the *initiation stage* as some of major instrument elements, like focusing neutron guide and hydrogen free-mica monochromator need to be simulated or validated. This will strongly influence both possible delivery time, fixed at present as 2015, and the final cost of the instrument

4 – Financial contribution

4.1 – Breakdown of the financial contribution

The breakdown of the VR financial contribution to the implementation of the development of the Instruments is presented in the following table in k€ for each Instrument (labelled SANS LLB and ToF Fa#):

VR financial contribution (k€, 2010 economical conditions)	2011	2012	2013	2014	2015	2016	Total
SANS LLB	951	1 020	1 309	1 400	900	420	6 000
ToF Fa#	649	980	1 591	1 800	1 600	1 380	8 000
Total per year	1 600	2 000	2 900	3 200	2 500	1 800	14 000

For the SANS LLB project, VR shall contribute to the implementation of the project by providing the CEA with a financial contribution of a total amount of 6.000.000 €, 2010 economical conditions, including an estimation of the manpower (internal and external) cost of about 2 000 000€.

For the ToF Fa# project, VR shall contribute to the implementation of the project by providing the CEA with a financial contribution of a total amount of 8.000.000 €, 2010 economical conditions, including an estimation of the manpower (internal and external) cost of about 2 000 000€.

VR shall be entitled to nominate up half of the estimated manpower dedicated to the development of the Instruments and permanently located at the TGI LLB/Orphée. Nominees shall be reviewed by the Coordination Committee according to their skills in developing the Instruments. Nominees may be drawn from engineers, post-docs and young scientists active in ESS AB or at Swedish universities or institutes.

4.2 – Modalities of payment

50 % of the VR financial contribution for each year shall be paid to CEA at the beginning of each half year, the year balance in June of each year. Every payment due by VR to CEA, in application of the provisions of the present paragraph, shall be made within thirty (30) days upon receipt of each CEA's invoice.

All payments shall be payable to the CEA under the conditions stated in CEA's invoices. The contribution may include taxes in accordance with the relevant laws, but the total VR contribution should not exceed the total one agreed herein.

CEA shall charge to VR, by right and without needing to send any formal demand to VR, a late payment charge for any late payment of the sums due by VR pursuant to the provisions of paragraph 4.2 above. The said late payment charge shall be due by VR for each calendar day of delay and shall be calculated by applying the basic bank rate of the European Central Bank, increased by two points to the sums due by VR.