



COLLABORATING RESEARCH GROUPS: A REVIEW

In 1988 the ESRF had its first discussions with external users to consider how an increase in the number of beamlines at the facility might be achieved. The ESRF had been designed and funded as a facility which would have essentially insertion device (ID) x-ray sources, but it was clear that scientists from the member countries who had no access or insufficient access to beamlines at National Synchrotron Radiation Facilities could benefit from the use of the radiation generated by the bending magnets (BM) in the storage ring. These sources, although less intense than the ID sources can, with appropriate focusing optics, produce x-ray intensities at the sample position which exceed that found in many national facilities. The Council agreed at its June 1990 meeting that scientists from the member countries could form groups to exploit these BM sources provided that this did not divert either manpower or funds from the main ESRF program. These groups are called Collaborating Research Groups (CRG). Several groups were formed in a very short period of time, and their scientific programs together with beamline designs were submitted to the Science Advisory Committee (SAC) for formal approval in 1991 (see Newsletter Nr 9). Formal contracts with the ESRF were signed soon afterwards and construction of the first CRG beamlines in the experimental hall started in 1992. The ESRF supports the CRG program, and provides x-rays free of charge in return for use of the instrumentation on the CRG beamlines for 1/3 of the scheduled beam time. The ESRF also provides the front-ends which transport the x-rays from the source to the beamlines.

In the future the cost of the ESRF front-ends will be refunded by the CRG.

The CRG program is now well established, with 4 CRGs having operated a user program since the end of 1994, and with 4 more groups having beamlines in an advanced stage of commissioning. A 9th CRG was approved by the Council at its June 1997 meeting, and the ESRF is aware that three possible further projects are under discussion. In view of the burden on the general ESRF infrastructure by further beamlines, the ESRF Council decided at its December 1997 meeting to set 16 independent CRG beamline branches as the threshold for the next review of the situation by the Council. The scientific aims of each of the first 9 CRGs are given in Table 1. The GRAAL experiment at the ESRF also operates as a CRG although it is dedicated to nuclear physics measurements, and does not use synchrotron radiation (see more details on page 41).

The user operation of the ESRF started in September 1994, and the shifts (8-hour running periods) allocated for user experiments on the operational CRG beamlines, up to the end of 1997, are shown in Figure 1. In total, 1723 shifts have been carried out for public users and 4014 shifts have been allocated to the CRGs «private» users. The total of 5737 compares with 18029 shifts being available for public users on the ESRF beamlines during the same period. Using these scheduling figures as a measure, we see that the public user program has been increased by nearly 10% due to the presence of the CRGs, and that the total scientific activity at the ESRF was increased by over 30% during the four-year

CRG	NATIONALITY	STUDIES	OPERATION DATES	
			SINCE	FORESEEN
BM1 (SNBL)	Swiss/Norwegian	Multipurpose	Jan. 95	
BM2 (D2AM)	French	Materials / Biology	Sept. 94	
BM7 (GRAAL)	Italian	Photoproduction of particles	Mid. 95	
BM8 (GILDA)	Italian	Multipurpose	Sept. 94	
BM20 (ROBL)	German	Materials / Radiochemistry		Sept. 98
BM25 (SPLINE)	Spanish	Multipurpose		2001
BM26 (DUBBLE)	Dutch / Belgian	Multipurpose		Sept. 98
BM28 (XMAS)	British	Magnetic scattering		April 98
BM30 (FIP)	French	Proteins structure		Sept. 98
BM32 (IF)	French	Interface studies (multipurpose)	Sept. 94	

Table 1

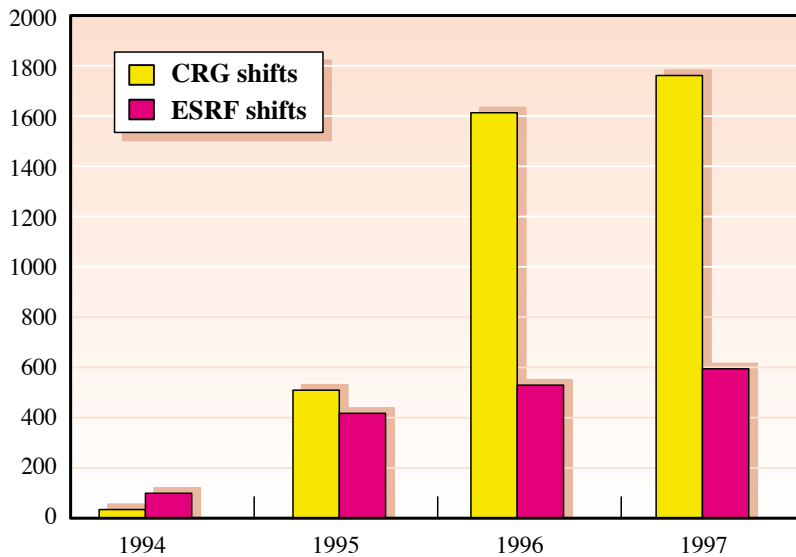


Fig. 1: shifts on CRG beamlines.

The ESRF and the CRGs have co-operated in two more significant areas. The first follows an initiative by the Swiss/Norwegian CRG to split the 6 mrad bending magnet radiation fan into two to enable two beamlines to operate independently. Other groups asked for a 9 mrad wide radiation fan to be delivered to the experimental hall. The ESRF subsequently redesigned part of the front-end so that this could be achieved, and this

development has greatly eased the space problems associated with the installation of two sets of optical components in the confined space available in a single optics hutch. Three CRGs have now chosen this 9 mrad option, despite having to pay for the additional front-end costs involved.

The second area of co-operation has been the provision of office and laboratory accommodation for the CRG staff and users. As previously stated, the original ESRF plans did not include any provisions for the CRGs. Through the CRG Club, the CRGs jointly expressed a need for accommodation «as close as possible to the beamlines». This is why there are now some buildings projecting outside the experimental hall. The ESRF Technical Services Division made the planning and construction of these buildings possible, while the ESRF Administration together with the CRGs made long-term financial agreements ensuring there would be no cost to the ESRF.

start-up period. It is expected that the CRGs will be able to maintain a significant contribution to the scientific life of the ESRF as more beamlines become operational during 1998. This extra activity is of course not obtained «free of charge», the total extra-capital investment by the countries having one or more CRG beamlines will be about 200 MFF by the time the ten groups all have operational beamlines. In addition, the salaries of beamline staff and the travel costs for about 1350 CRG users who have come to the ESRF so far, to carry out 450 CRG proposals, are funded from the CRGs' own budgets.

With the move from the construction phase of the ESRF towards routine operation, the CRGs are, through the CRG Club, extending the co-operation between themselves, and where possible, with the ESRF. Since the start of the CRG program, the ESRF has recommended that the CRGs adopt ESRF technical solutions where possible as such a policy has many advantages. The CRGs are now building up a stock of spare parts which are commonly available, and it is hoped that in the near future this concept will be extended to other areas, e.g. participation in a detector pool at the ESRF.

CRG infrastructure - ESRF/CRG collaborations
At the inception of the CRG program, the CRGs formed a «club» as a forum for sharing new ideas, for discussing the difficulties involved in working in a «foreign» laboratory, and as a means of communicating with the ESRF. This quickly led to the ESRF Council's agreement to the appointment of a CRG liaison engineer to be responsible for advising the CRGs on all technical matters relating to the installation and operation of their beamlines. When the first beamlines became operational, the CRGs started to need help with the internal ESRF administration of their own user programs and collectively provided funding for employment of secretarial assistance. This user oriented work has now increased and currently two part-time secretaries are employed. During the last year, CRGs have also been collectively funding a technician post to assist with various construction and user-oriented tasks on their beamlines. These staff are employed by the ESRF on behalf of the CRGs.

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