

### 3.1 APS Users

At the APS, users fall into three categories: (1) Collaborative Access Team (CAT) members, (2) collaborators or colleagues of CAT members, or (3) Independent Investigators (IIs). CATs are responsible for building and operating the beamlines in one or more sectors; thus, CATs comprise not only scientific research members, but also beamline construction and operations staff. Collaborators and IIs come to the APS solely to conduct research; their home institutions have no formal affiliation with the CAT on whose beamline they work.

#### 3.1.1 Collaborative Access Teams

The CATs are selected through a comprehensive, peer-review proposal process developed by the APS in 1989 and described

in last year's *Experimental Facilities Division Progress Report 1996-97* (ANL/APS/TB-30). By the end of 1997, 14 CATs had been approved, accounting for 20 sectors. Figure 3.1 shows the distribution of these 20 sectors by primary discipline. Subsequently, an additional six Letters of Intent have been received and approved. Full scientific proposals have been received for all of them. Five of the proposals were approved by the Program Evaluation Board (PEB) prior to September 1998, which has resulted in allocation of two additional sectors. If all requests for new sectors receive approval, a total of 26 sectors will be committed; the projected distribution by discipline is also shown in Figure 3.1. (Appendix 4 provides a detailed record of the entire CAT review process to date.)

During their first year of operation, CATs (and their collaborators) are entitled to use 100% of the available beam time. (A CAT

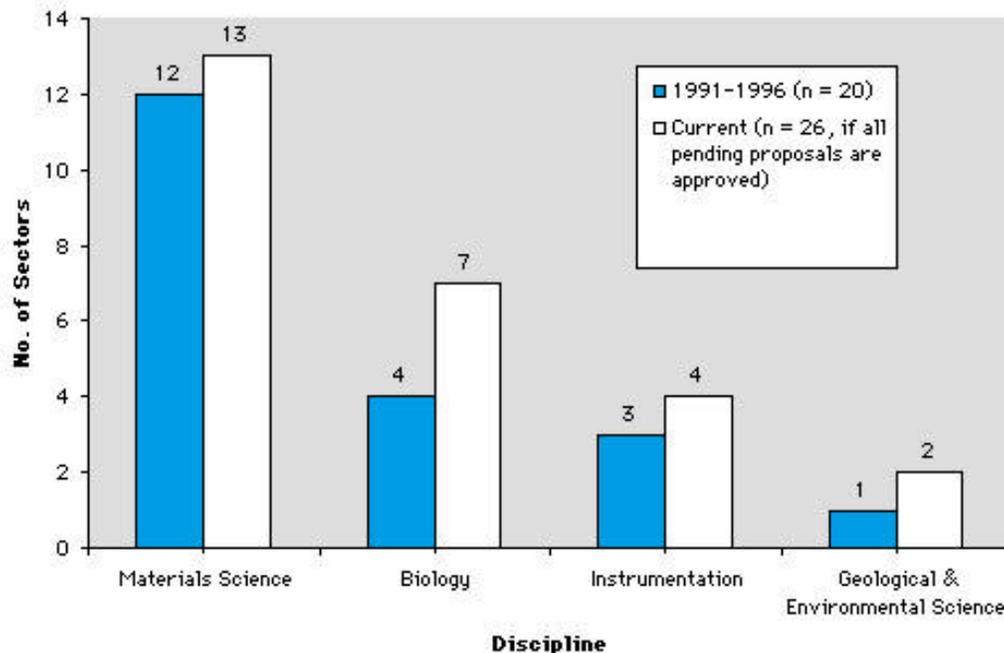


Fig. 3.1 Distribution of APS CAT sectors by primary scientific focus (as of 7/30/98).

specifies when its beamlines—or portions thereof—are officially operational.) After the first year, they are entitled to 75% of the beam time and must make the remaining 25% available to IIs selected through a peer-review proposal process. Each CAT develops its own process, which must be reviewed and approved by the APS. As of September 1998, only SRI-CAT has begun an official II program.

### 3.1.2 Independent Investigators/Collaborators

On April 1, 1998, SRI-CAT officially began its II program. Two other CATs (IMCA-CAT and UNI-CAT) have APS-approved II plans in place but have not yet officially declared their beamlines operational. To date for SRI-CAT, 10 II proposals have been received, reviewed, and accepted. All other CATs, however, have been conducting

commissioning-related experiments with CAT members and collaborators.

### 3.1.3 User Community Description

As of July 30, 1998, the APS user community comprised 1070 persons. (An APS user is defined as an individual who has been at the APS to conduct hands-on work, has completed a general/safety orientation, and has received a user badge.) Of the 1070 APS users, 64% are CAT members, and the remaining 36% are either IIs or collaborators. Figure 3.2 shows the growth of this community during the past five years. The first five users officially arrived by April of 1994; during that first year, 35 individuals were oriented and given badges. In contrast, from January 1 through July 30, 1998, 395 new users completed this process. Figure 3.3 shows the distribution of current APS users by institutional affiliation, Figure 3.4 by primary research funding source, and Figure 3.5 by discipline.

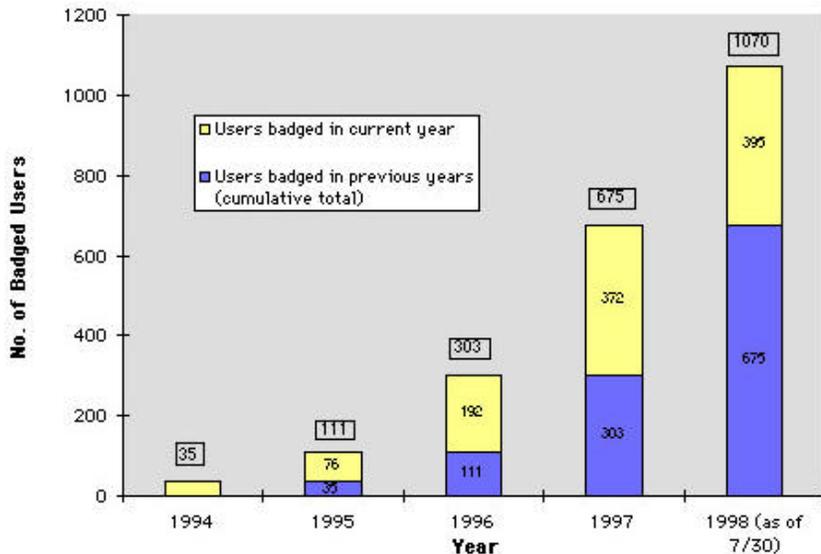


Fig. 3.2 Increase in number of badged APS users by year.

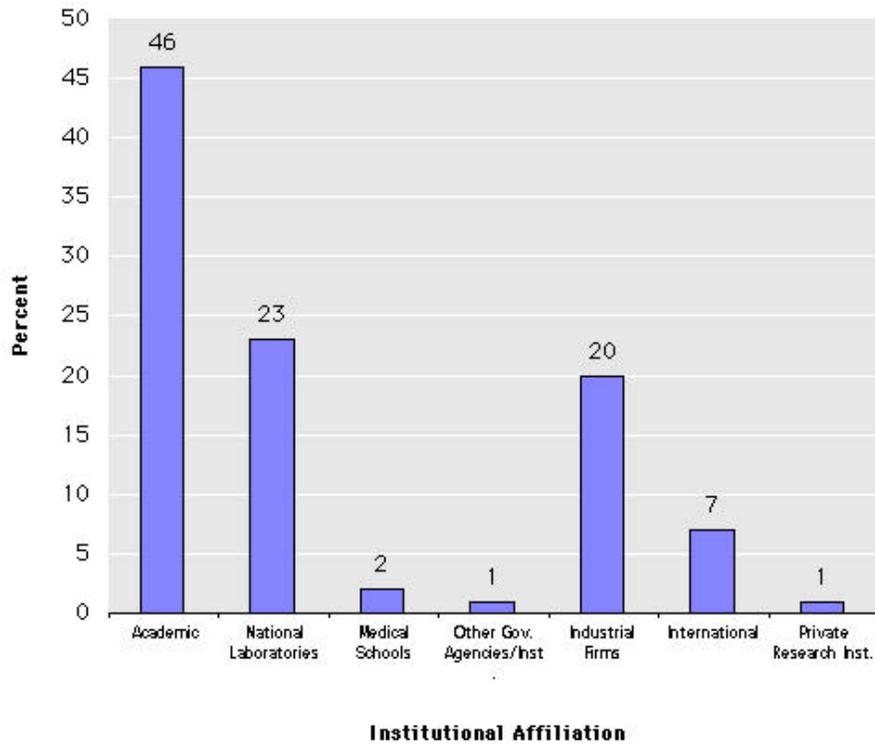


Fig. 3.3 Percentage of APS users by institutional affiliation (as of 7/30/98).

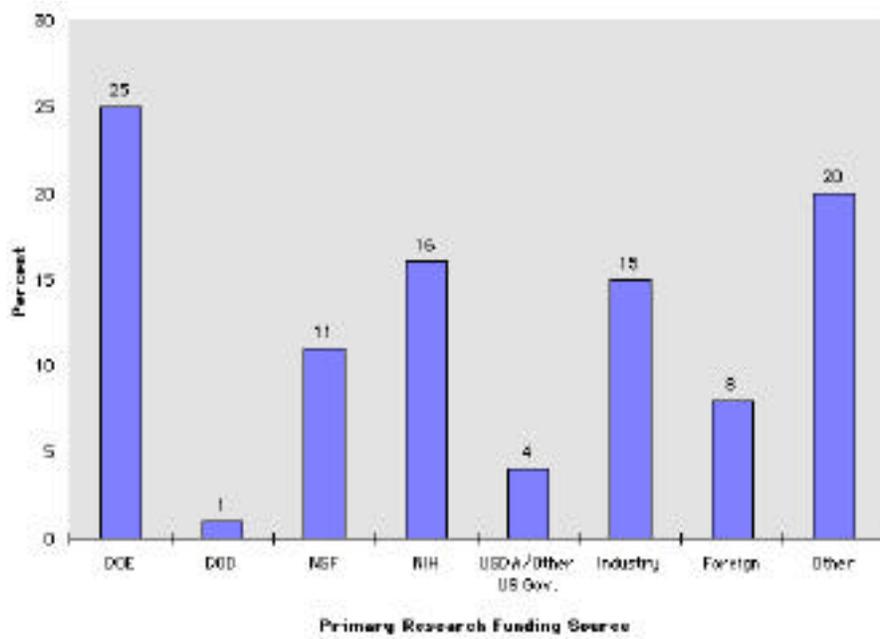


Fig. 3.4 Percentage of APS users by agency that provides research funding (as of 7/30/98).

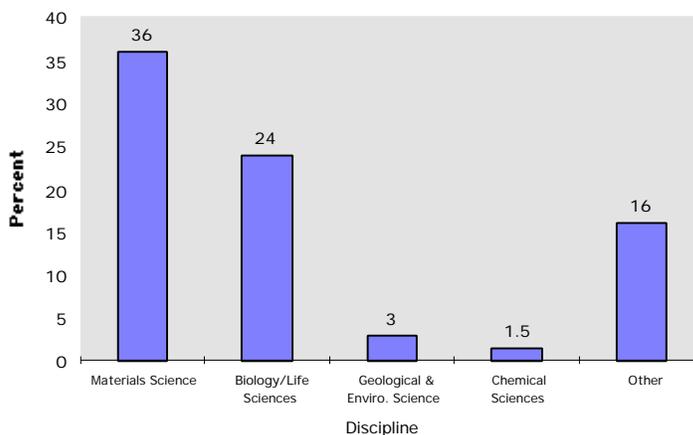


Fig. 3.5 Percentage of APS users by discipline (as of 7/30/98).

## 3.2 User Support

Administrative support for users is coordinated through the APS User Office, which serves as the initial point of contact for new and prospective users. The User Office provides information; registers, orients, and issues badges to new users; manages user data; serves as the APS liaison to the APS Users Organization; provides administrative support to the PEB and Research Directorate (composed of APS top management and the Directors of APS CATs); organizes general meetings and topical workshops for the user community; and handles day-to-day user questions and concerns. User Agreements and Accounts are handled through the Experimental Facilities Division Office, as is user policy development. Beamline design reviews, experiment safety approval forms, and other technical issues are handled by the User Technical Interface Group. Day-to-day support for CATs on the experiment hall floor is provided by the floor coordinators through the Experiment Floor Operations Group (see section 2.8).

### 3.2.1 User Communications

During 1998, a number of vehicles were used to communicate with users: on-site “CAT Chats,” the User Information Web page, CAT NET, *CAT Communicator*, and a new Web site organized and maintained by the APS Users Organization. CAT Chats are held almost every Friday at 3:00 p.m. During this time, APS management and operations staff meet with users in an open forum to discuss issues of common interest. Machine status, scheduling information, upcoming APS and ANL events, and current projects or concerns are all covered in a relaxed, informal setting. Minutes are taken and action items recorded. Status reports on action items are given at the next week's meeting. Archives of CAT Chat minutes are available on the Web. In addition, the User Information Web page contains links to technical and safety-related publications, contact and access information, conference and meeting agendas, operational status reports, CAT Home Pages, and other general information sites. CAT NET, which is an e-mail notification system, is used as needed

to provide bulletins of interest specifically to on-site users. Two issues of *CAT Communicator* (a newsletter for APS users with a circulation of approximately 1600) were published during the first half of 1998. A third issue is planned for distribution in September, and a fourth will be published in December.

### 3.2.2 User Registration, Orientation, and Badging

Before a user can conduct hands-on work at the APS, he or she must register with the User Office and complete both a general orientation course and sector-specific training; in addition, a signed User Agreement must be in place between the APS and the institution sponsoring the work (see below). The general orientation course covers Argonne and APS policies; general safety information such as site alarms, the use of 911 for emergencies, hazard communication, radiation safety, and experiment safety; and the basics of the beamline Personnel Safety System (PSS). Additionally, for unescorted access to the experiment hall floor, a user must complete General Employee Radiation Training (GERT) or prove that he or she has successfully completed GERT at another DOE facility within the previous two years. The general orientation course is now Web-based; although the majority of sessions are conducted in the User Office, some preliminary experiments with distance delivery have been conducted with staff from the University of Florida. GERT is provided in the User Office as computer-based training.

When the orientation course and GERT have been completed, users sign a statement indicating their willingness to comply with ANL/APS policies and guidelines and acknowledging the existence of appropriate User Agreements. Users are then provided with reference copies of the newly revised *APS User Guide* and the *APS User Safety Guide* and issued Cardkey® identification badges that enable them to enter both the Argonne campus and the controlled-access APS experiment hall. During 1998, the User Office received permission from the DOE to issue APS user badges, and appropriate badging equipment was purchased and installed. Sector-specific training (required for every sector at which a user works) is the responsibility of the host CAT, which furnishes training records to the User Office for audit purposes. By the end of 1997, a total of 675 users had been registered, oriented, and given badges. Through the end of July 1998, an additional 395 were added.

### 3.2.3 User Data Management

Information about APS users is stored in a relational database system developed by the User Office. The system is flexible and easily modifiable in-house. Current modules include People, Registration, Directory (which functions as a “read-only” electronic “Rolodex” for APS user contact information), CAT Information, II Proposals, User Accounts, User Agreements, User Training, Meetings and Conferences, and the recently added APS Tours. Each module has separate read/write access privileges and is appropriately password protected. The Directory module is

accessible through the User Information Page on the Web, where individual user entries can be self-updated.

### **3.2.4 Support of User Advisory Groups**

Administrative support is provided for three main user-related advisory groups: the 16-member APS Users Organization Steering Committee meets quarterly and serves as a support, advisory, and advocacy group for the APS (the APS User Program Administrator serves as the primary APS liaison for this group); the Research Directorate, which also meets quarterly, is chaired by David Moncton and facilitated by a CAT Director selected by his peers; and the Program Evaluation Board, mentioned earlier, meets at least annually to review new Letters of Intent and proposals and conduct CAT progress reviews. This year, the PEB met for three days in February; a second two-day meeting took place in September.

### **3.2.5 Conference and Workshop Organization and Support**

General APS user meetings are held every 18 months, with an average attendance of about 500. Comprehensive organizational support for these meetings is provided by the User Office. The Eighth Users Meeting was held on April 15-17, 1997, and the Ninth Users Meeting, which includes six specialized workshops, is scheduled for October 13-15, 1998. In addition, the User Office provides support as requested for specialized meetings and workshops held at the APS and elsewhere. The most recent was

the Sixth International Conference on Biophysics and Synchrotron Radiation held at the APS on August 4-8, 1998, with an attendance of over 300. The next scheduled meeting with User Office support is the 18th International Conference on X-ray and Inner Shell Processes planned for August 23-27, 1999, in Chicago.

### **3.2.6 User Agreements**

As mentioned above, before a user can conduct hands-on work at the APS, a User Agreement must be signed by Argonne National Laboratory and the institution sponsoring the work. These agreements address financial, liability, and intellectual property issues. As of August 7, 1998, APS User Agreements are in place with 140 institutions, including 65 universities and non-profit institutions, 27 industrial firms, 12 U.S. government-funded labs, and 36 international institutions. The list of institutions that have signed APS User Agreements can be found in Appendix 5.

### **3.2.7 User Accounts**

User Accounts are established at the APS to enable users to pay for ancillary equipment, supplies, and services, as well as beam time used for proprietary research. Four types of accounts are currently in place: construction, capital equipment, operating, and proprietary. As of July 30, 1998, 105 User Accounts are in place, serving 54 institutions. Of those, 15 are construction accounts, 29 are for capital equipment, 46 for operating expenses, and 15 for proprietary beam time. During the current fiscal year, the funds managed by the APS on behalf of users totaled \$17.1 M.

### 3.2.8 User Policies and Procedures

*APS User Policies and Procedures* is a comprehensive umbrella document designed to provide guidelines for all aspects of APS participation by CATs and IIs and to clarify the roles of the APS staff and various user advisory groups. Development of user policies and procedures is an ongoing process. A comprehensive index of all policies (both currently existing and under development) appears on the User Information Web page. When new policies are developed (or existing policies are changed), they are presented to the APS Users Organization Steering Committee, the Research Directorate, and the Program Evaluation Board for review and comment. The Associate Laboratory Director for the APS has final approval. As soon as the policy or policy change has been approved, it is added to the Web policy library.

### 3.2.9 Beamline Design Reviews

During the beamline design phase, the User Technical Interface Group (UTIG) works with CATs to ensure that their preliminary and final designs not only comply with the CAT's operational requirements but also comply with applicable safety standards and APS operational requirements. During 1997-98, Preliminary Design Reports (PDRs) were completed for 18 sectors, and Final Design Reports (FDRs) for 16; additionally, a number of design report updates were reviewed. Installation of beamline systems has continued at a rapid pace throughout the year; this activity is coordinated by UTIG. Continuing support was also provided for the design and installation of user beamline utilities and the construction of user laboratory and office space in the laboratory/office modules (LOMs).

### 3.2.10 Technical Policy Support

Additional efforts this year have been made to tailor APS and ANL requirements to better meet the needs of the growing user community. These activities have ranged from defining the policies and procedures by which users can bring third-party contractors to work in CAT facilities to establishing a standard for transporting small quantities of hazardous materials on the ANL site that is consistent with Department of Transportation requirements. Periodic Technical Updates are used to communicate these developments to the user community.

## 3.3 User Safety

At the APS, safety is a line management responsibility that is shared by the CATs. The following are the basic elements of the approach used by the APS and the CATs to create and sustain a safe working environment for APS users:

- The CATs identify hazards and incorporate appropriate engineered safeguards and procedural controls into their APS facilities and operations.
- Each CAT conducts its activities at the APS in accordance with a written safety plan developed by the CAT and approved by the APS.
- Users receive appropriate safety training for their activities at the APS.
- The APS, ANL, and the CATs themselves perform safety oversight of user activities.

This overall approach was described in detail in last year's *Experimental Facilities Division Progress Report 1996-97* (ANL/APS/TB-30). The Experiment Safety Review process and the Independent CAT Safety Assessment process have continued to evolve since the above report was written; updates on these processes, which are consistent with DOE's guidelines for Integrated Safety Management, are given below. Recent safety actions, reviews, and audit activities are also summarized in this section. A broader summary of XFD's safety activities during FY 1998 is given in Appendix 6.

### 3.3.1 Experiment Safety Review

The CATs have the primary responsibility for safety reviews of proposed experiments. The information needed to perform these reviews is obtained through the use of a standard APS Experiment Safety Approval Form. This form is completed in part by the experimenter, who describes the materials and equipment to be used, the known hazards, and the ways in which these hazards will be mitigated; and in part by the CAT Director or designee, who reviews the information, makes recommendations as needed, and ultimately signs off to indicate approval. An individual designated by the CAT must also sign the form just before the beginning of the experiment to verify that all required safeguards are in place. The form is then posted at the beamline for the duration of the experiment.

A Web-based system for submission and approval of the Experiment Safety Approval form is currently (as of mid-August 1998) in beta testing; it is expected to be available for general use before the end of FY 1998. The

system includes safety guidance for the experimenters and the CATs.

An XFD committee oversees the CAT experiment safety review process to ensure compliance with ANL safety requirements and provide additional guidance on safety-related issues. The committee (which includes the XFD Division Director, Associate Director for Operations, ES&H Coordinator, and Experiment Safety Review Coordinator) meets weekly to discuss ongoing and future experiments. The XFD Experiment Safety Review Coordinator serves as the liaison between the CAT Safety Coordinators and the APS.

### 3.3.2 Independent CAT Safety Assessments

To take advantage of the CATs' growing experience in managing their own safety programs at the APS, XFD has also initiated the formation of three Independent CAT Safety Assessment groups, within which the CATs conduct reciprocal assessments of each other's safety programs. A set of model assessment criteria has been provided by XFD. Each of the CATs currently in residence at the APS has named a representative to one of these groups, and the XFD Experiment Safety Review Coordinator is an *ex officio* member of all three groups. Each CAT is reviewed by the other CATs in its group at least annually, on a rotating basis. After a given CAT is reviewed, it receives a written report (which is copied to XFD) identifying action items and a schedule for completing these actions. The groups are also encouraged to make recommendations to the APS for enhanced safety support. As of mid-August 1998, the safety programs of five CATs have been reviewed in this manner.

### 3.3.3 Safety Actions, Reviews and Audits

During the past 18 months, ANL has been evaluating its operations for conformance with DOE Policy 450.4, *Safety Management Systems Policy*. To comply with this policy, DOE contractors' safety programs must reflect seven "Guiding Principles" and define the manner in which five "Core Functions" are being carried out. At the APS, Integrated Safety Management (ISM), the term used to describe the DOE's expectations, is not a new concept.

APS CATs have benefited from the emphasis the APS has long placed on safety planning and the incorporation of CATs into the APS line management structure with regard to safety issues. The general approach the Division has taken in working with the user community is entirely consistent with the ISM principles and functions. For example, the guiding ISM principles can be seen in the "Introduction" to the model CAT safety plan created by XFD. The model plan provides a number of mechanisms for carrying out ISM's five Core Functions. Ongoing reviews and APS oversight activities confirm that the CATs are implementing these mechanisms and that they view safety as a primary management concern.

XFD continues to provide technical and administrative safety support to the CATs through the User Technical Interface Group and the XFD ES&H Coordinator. The Division also provides ongoing informal surveillance and oversight and periodic audits and reviews. Each of these activities helps CATs to improve their safety performance.

XFD also continues to conduct periodic walk-through inspections of CAT-occupied facilities and to provide feedback to CATS about observed behaviors and workplace conditions. In general, CATs are provided advance notice of these inspections so that knowledgeable CAT personnel will be available to participate and to answer questions posed by the inspection team.

In response to guidance from ANL, XFD conducted a "chemical vulnerability" audit during the last quarter of CY97. The audit found no unacceptable risk or other lack of conformance to expectations. The conclusions of the audit were later validated by a team consisting of representatives from DOE and from ANL's ESH/QA Oversight Group.

Since housekeeping is an important component of safety, XFD organizes a comprehensive cleanup of the experiment floor at least four times a year and more frequent cleanings of the aiseways between sectors.