



CAT Communicator

ISM: What is it?

The Advanced Photon Source should feel right at home with the Integrated Safety Management (ISM) system—as a DOE user facility, the APS has from its inception operated in accordance with policies and procedures that integrate safety into all aspects of work.

What is ISM?

Despite the unfamiliar acronym, the core functions and guiding principles (see tables on p. 4) behind the system will be easily recognized by users at the APS. ISM is a common-sense system that promotes the concept that safety should play an integral role in the planning, execution, and review of all activities. The system provides a framework that ensures that the main elements of safety— environmental protection, occupational health, and the public safety—are incorporated into all work activities.

ISM allows ANL (including the APS) to tailor safety protocols to meet actual needs in the workplace. It removes the “one-size-fits-all” concept of safety programs. ISM is so important that both the DOE and Congress require all DOE facilities to establish ISM plans.

What is ISM verification?

Because ISM is based on a DOE policy,

the DOE will be leading an effort to verify implementation of the program at all national laboratories. A forty-person DOE verification team will be coming to ANL February 7-18, 2000, to conduct an in-depth review of the program at the Laboratory, including the APS. The review will take place in a user operations period, during which there is likely to be a mix of APS and CAT staff, collaborators, and independent investigators on the experiment hall floor.

During the on-site evaluation, the review team may look to see how work at the beamlines is planned and carried out and how CAT policies and procedures flow down to the actual work being performed on the

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News bits

Increased DOE security measures now in place at ANL require all visitors who are citizens of or whose employers are located

Sensitive Countries		
Algeria	Iran	Russia
Armenia	Iraq	Sudan
Azerbaijan	Israel	Syria
Belarus	Kazakhstan	Taiwan
China	Kyrgyzstan	Tajikistan
Cuba	Libya	Turkmenistan
Georgia	Moldova	Ukraine
Hong Kong	N. Korea	Uzbekistan
India	Pakistan	

in a “sensitive” country (see table at left) to have an indices check completed before access to the facility will be granted. Because these checks may

take a minimum of 12 weeks to complete, potential APS users in this category should register as early as possible—even if beam time has not yet been scheduled. More details about indices checks and links to assist you with user registration can be found on the user information home page at <http://www.aps.anl.gov/ui> under “Special Instructions for Non-U.S. Citizens.”



To obtain **reduced housing rates at the Argonne Guest House (AGH)**, APS users can show their photo I.D. badge at the front desk when registering. The AGH offers 157 guest rooms including 11 “quads” (four-bedroom suites with living areas and kitchenettes). Call either (800) 632-8990 or (630) 739-6000 to inquire about reservations.

Doing experiments at the APS? Your home institution must have a valid APS user agreement on file with the APS before you can do any hands-on work. Check <http://www.aps.anl.gov/ui> under “User Agreements” to see the current list of approved agreements. If you don’t find your institution listed, instructions for on-line submission of a user agreement questionnaire can also be found on that Web page.



For each APS sector at which you plan to do hands-on work, you must complete a sector-specific orientation. Contact the CAT safety coordinator to arrange a sector orientation before starting work.

A reminder: **APS user photo I.D. badges** are considered DOE property and are mandated for use only by the individual to whom they are issued, as explained during user orientation. Badges may not be transferred or loaned to anyone else and must not be discarded. Return unwanted badges to the APS User Office. Inappropriate use of a user badge may result in confiscation of the badge and loss of access privileges.



The **10th Users Meeting for the Advanced Photon Source** will be held May 2-4, 2000. A diverse and stimulating selection of workshops will be offered along with a poster session/reception and the traditional user meeting banquet. The year 2000 banquet will be held at Chicago’s Adler Planetarium. Mark your calendars! 🌟



CAT Communicator is intended to provide timely information to Advanced Photon Source Collaborative Access Team members and associates.

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WANTED: Your short papers and extended abstracts...

Submission deadline: February 29, 2000



We need you!...for the first-ever APS User Activity Report. Reports of work conducted at the APS from “first light” through December 31, 1999, are being sought from the APS user community. Publication of this cumulative report is planned for late April 2000, in time for distribution at the 10th Users Meeting for the Advanced Photon Source (scheduled for May 2-4, 2000). The Q&A table (below) provides quick answers to commonly asked questions about submitting reports. Details can be found at <http://www.aps.anl.gov/xfd/communicator/user2000/home.html>

Questions can be directed to Connie Pittroff by e-mail at pittroff@aps.anl.gov or by telephone at (630) 252-0909. ↴

The APS User Activity Report	
Q	A
What can I submit?	This activity report is <i>cumulative</i> . Reports and/or extended abstracts on work conducted at the APS from first light through December 31, 1999, are requested.
How long can they be?	1-2 single-spaced pages in length, including any figures and references.
How do I submit?	Two options: 1. anonymous FTP site (see Web page) 2. 3 1/2" diskette
What about formatting my submission?	Templates (both Word and WordPerfect) are available on the Web site. Cut and paste your text and graphics into these templates.
Is there anything else I have to send in with the report?	Yes. 1. Include a separate, individual file for each of your graphics. 2. If the submitting author is not an Argonne employee, fill out the brief Publication Release Form (available on the Web) and fax it in to 630-252-9250. (One release form needed per submission.) 3. Send an e-mail to pittroff@aps.anl.gov in which you list the CAT and beamline where the work was conducted, the scientific discipline of the work, and who funded it.
What is the deadline for submission?	February 29, 2000
Will my paper be posted on the Web, too?	Yes. Once all the required information is received and the paper is accepted, papers are posted two ways: by CAT and by scientific discipline.

ISM...Continued from p. 1

experiment hall floor. DOE team members may review CAT documents, observe work being conducted, and interview members of the user community. Users who are interviewed need to understand their safety responsibilities with respect to the work they do on the beamlines.

No one will be asked to “recite” the guiding principles or core functions; the review team will be checking to see that the culture of the user community integrates safety into its work practices. Users should be familiar with their work, its potential hazards, and how those hazards are mitigated. All users should know whom to contact for answers to safety-related questions.

Where can I get more information?
Check the following sources for further

information about good safety practices and the ISM review:

- Floor Coordinator
- CAT Safety Coordinator
- <http://www.anl.gov:80/ESH/focus/focus-ism.pdf> (an ANL ES&H FOCUS article about ISM)
- Bob Ferry (phone 630.252.9495, e-mail bferry@aps.anl.gov)
- Bruce Glagola (phone 630.252.9797, e-mail glagola@aps.anl.gov)

What is the ISM evaluation schedule?

An ANL ISM team-building period is scheduled for January 17-21, 2000. No visits to APS other than an introductory tour are anticipated.

The ANL ISM evaluation period will take place February 7-18, 2000. Interviews at the APS facility will take place February 8-14, 2000. ↴

The Five Core Functions of ISM		ISM's Seven Guiding Principles
Define the scope of work.	What is the work task? Do worker skills meet the task requirements? Is the proper equipment available? Is outside assistance required? Has this task presented difficulty in the past?	Line management responsibility for safety. Clear roles and responsibilities.
Analyze the hazards.	What are the task's hazards? Does the work need to be reviewed? Are special permits or permissions required?	Competence commensurate with responsibilities.
Develop and implement hazard controls.	Are all necessary controls in place? Do workers know how to use the controls? Do workers know what to do if a problem arises?	Balanced priorities.
Perform work within controls.	Has the setup performed as expected? Do workers know whom to call for assistance? Do workers know when to use "stop work" authority?	Identification of standards and requirements.
Provide feedback and seek continuous improvement.	Was the task adequately planned? Were there any unforeseen events? Are there ways to improve the task next time? Did workers have the proper training for the task? What could be done to improve the work next time?	Hazard controls tailored to work being performed. Operations authorization.

New CATs on the block: SER-CAT and HP-CAT join the APS

Two new Memorandums of Understanding (MOUs) signed at the APS in 1999 bring the total number of CATs to 17



CAT Director B.C. Wang introduces SER-CAT to the APS.

The Southeast Regional (or SER) CAT MOU signing took place on March 12, 1999. SER-CAT, which represents institutions from the states of Alabama, Florida, Georgia, Kentucky, Missouri, North Carolina, South Carolina, Tennessee, Virginia, and the Intramural Program of the National Institutes of Health, held the signing ceremony out on the experiment hall floor.

The SER-CAT facility will be optimized for macromolecular crystallography work; the beamlines are being designed in anticipation of continually increasing structure complexity and decreasing sample sizes. Research areas will cover a wide range of structural molecular biology topics, including protein and virus structures, enzymes, protein/nucleic acid complexes, and membrane-bound complexes. Techniques implemented will include monochromatic crystallography; multiple wavelength anomalous diffraction (MAD) phasing;

and single wavelength anomalous diffraction (SAD) phasing, using either native or isomorphously replaced anomalous marker atoms for both MAD and SAD phasing.

Because of their common experimental techniques, SER-CAT has been able to use the Structural Biology Center (SBC-CAT) beamline designs. Since the official start of the construction effort on June 15, 1999, SER-CAT has reviewed and modified (as needed) SBC-CAT beamline and hutch designs. Contracts for the monochromator, mirror, and ID beamline hutches have been awarded. Upgrades for monochromator and mirror mechanics are in the engineering and design phase. Service contracts for beamline control and protection circuitry have been placed with ANL's Electronic and Computing Technology Division. The preliminary design report will be prepared and submitted soon, and the SER-CAT safety program has been submitted to APS for review.

SER-CAT is operated by the University of Georgia and the CAT management team, including CAT Director Bi-Cheng Wang, Assistant Director John Rose (purchasing and procurement), CAT Coordinator Craig Smith (University of Alabama), and CAT Secretary Lily Lee, is centered there. The SER-CAT construction team is located at ANL and includes Project Director Gerd Rosenbaum, Project Administrator John Unik, and Project Coordinator John Gonczy. Anyone interested in the mission and membership of SER-CAT may contact B.C. Wang at wang@bcl1.bmb.uga.edu. Questions about technical issues should be addressed to Gerd Rosenbaum at rosenbaum@anl.gov.

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Success of first school sets stage for NXS 2000



Jon Tischler familiarizes students with a UNI-CAT beamline and equipment.

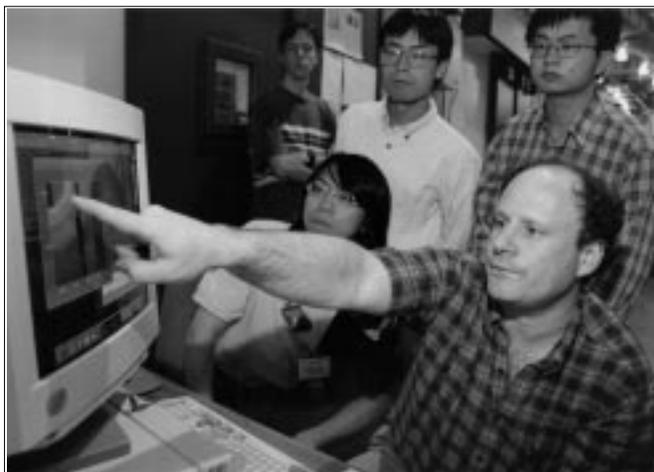
The first-ever National School on Neutron and X-Ray Scattering was held August 16-27, 1999, at Argonne National Laboratory. Forty-eight students out of 133 applicants were accepted for the intensive two-week program, which was funded by the Office of Basic Energy Sciences of the Department of Energy. The students came from diverse academic backgrounds and included 17 Ph.D. candidates in chemistry, 16 in physics, 11 in materials science, two in chemical engineering, and two from other disciplines. Many Argonne divisions and APS CAT personnel were involved in the preparation, implementation, and teaching of the school, including staff from the Advanced Photon Source, Intense Pulse Neutron Source (IPNS), Materials Science Division, Chemistry Division, and various faculty and staff users affiliated with the beamlines.

Hands-on experiment courses at the IPNS and the APS were designed to integrate specialized tutorials about the interactions of neutrons and x-rays with matter (presented at the beginning of the school) with practical experimental techniques. The

program included experiments in either “soft matter” (neutron and x-ray reflectivity, neutron and x-ray small-angle scattering) or “hard matter” (neutron and x-ray powder diffraction, EXAFS, and neutron spectroscopy). The students were divided into eight experimental groups; a total of 40 local instructors participated in the computer, neutron, and x-ray laboratory sessions.

At the APS, two soft-matter x-ray experiments (reflectivity of polymer thin films and small-angle scattering from colloidal suspensions) and two hard-matter experiments (powder diffraction and EXAFS) were offered. For each experiment, students broke into sub-groups and spent time on the APS experiment hall floor collecting and analyzing their own data under the supervision of the APS staff. Students were asked to pay particular attention to the complementary nature of x-ray and neutron techniques. Students were impressed by the speed of the x-ray data collection at the third-generation source and most were able to evaluate their data and draw valid conclusions about the samples.

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Larry Lurio of IMM-CAT tutors students in data collection and analysis.

Success...Continued from p. 6

The neutron experiments were designed to explain the diverse properties of neutrons via scattering experiments. These experiments helped the students understand the interaction of neutrons with materials, the physical parameters that can be measured, general aspects of preparing for experiments, and the selection of instruments. The students examined a range of materials, including both polymers and porous materials measured by small-angle neutron scattering (SANS). Neutron reflectometry was used to measure the thickness of thin polymer films. Crystalline materials (e.g., titanium oxide) were studied by neutron powder diffraction. More complex experiments, such as time-of-flight neutron inelastic scattering, were also introduced to the students. The second National School on Neutron and X-Ray Scattering is being planned for the summer of 2000. ▽

New CATs...Continued from p. 5

The High-Pressure (or HP) CAT signed its MOU on September 17, 1999, in the large fifth-floor conference room in building 401. HP-CAT currently has three institutional members, including the Carnegie Institution of Washington (managing member), Lawrence Livermore National Laboratory, and the University of Nevada, Las Vegas. HP-CAT, which is located at sector 16, plans to establish a world-leading high-pressure research center at the APS. X-ray diffraction and spectroscopy



(l to r) David Moncton (Advanced Photon Source), Joe Asbury (Argonne National Laboratory), Malcolm Nicol (University of Nevada, Las Vegas), Wesley Huntress (Carnegie Institution of Washington), William Goldstein (Lawrence Livermore National Laboratory), and David Mao (HP-CAT Director) sign the MOU for HP-CAT.

techniques will be used to study samples at high pressures and variable temperatures (from cryogenic conditions to thousands of degrees). This integrated approach will enable HP-CAT to measure the structural, vibrational, electronic, and magnetic properties of materials *in situ* to study transitions and other novel phenomena at ultrahigh pressures.

Currently, HP-CAT is in the instrumentation design phase and has started the procurement process for the hutches. The sector will consist of one undulator beamline and one bending magnet beamline, with a total of four optics hutches and five experiment stations. Each beamline will have two branches; simultaneous operation of two diffraction stations

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Meet Jeff Alicz

Jeff Alicz (pronounced “al-itch”) joined the APS in September 1999 as the ESH/QA representative in the User Program Division (UPD). He is currently working with Bruce Stockmeier on ESH-related projects for the user community, UPD, and XFD (Experimental Facilities Division). Jeff’s recent work has included safety inspections of various laboratories and beamlines, hazard analyses for experimental activities, and accident investigation work. In addition to his ESH work, Jeff is also assisting in the development and review of QA plans and conducting QA oversight for UPD and XFD procurements.



Jeff Alicz is the ESH/QA representative in the newly formed User Program Division of the APS.

Jeff holds a B.S. in industrial technology and an M.S. in industrial management (with an emphasis in safety and quality), both from Northern Illinois University. He began working at Argonne in 1992 as a safety co-op student with the Materials Science Division. From 1993 until he joined the APS, he worked in Health Physics at ANL.

In his “off hours,” Jeff enjoys jet skiing, camping, fishing, and reading, although Jeff says his hobbies will soon be on hold since he and his wife Cathy are expecting their first baby in May. Jeff Alicz’s office is located in building 401, room B1147C. His phone number is (630) 252-9525; e-mail can be sent to alicz@aps.anl.gov. ↴

New CATs...Continued from p. 7

and two spectroscopy stations is expected to begin in 2001. The instrumentation available will also include optical spectrometers (e.g. Raman and infrared) so that HP-CAT will be capable of complete multidisciplinary studies of samples using state-of-the-art instruments and provide truly unique research opportunities for the high-pressure community.

HP-CAT is currently recruiting and has vacancies for several beamline scientists, two technicians, a draftsman, an engineer, a computer/network systems administrator, a project administrator, and a secretary.

Current HP-CAT staff members include CAT Director Ho-Kwang (David) Mao, Project Manager Daniel Häusermann, HP-CAT Member Malcolm Nicol, HP-CAT Member Choong-Shik Yoo, and Beamline Scientist Markus Schwoerer-Böhning.

Contact Daniel Häusermann by e-mail at daniel.hausermann@anl.gov with any questions about HP-CAT. ↴

2000 APS User Calendar

Date	Event
January 13, 2000	APSUO Steering Committee Meeting
January 14, 2000	Research Directorate Meeting
January 21-28, 2000	Biomedical Applications of Free-electron Lasers (part of SPIE's International Symposium on BIOS 2000), San Jose, CA
February 16-18, 2000	Program Evaluation Board Meeting
March 16, 2000	APSUO Steering Committee Meeting
March 16-17, 2000	International Workshop on Metrology for X-ray and Neutron Optics, Argonne, IL
March 20-24, 2000	American Physical Society March 2000 Meeting, Minneapolis, MN
April 29-May 2, 2000	American Physical Society April 2000 Meeting, Long Beach, CA
May 1, 2000	Research Directorate Meeting
May 2-4, 2000	Tenth APS Users Meeting, Argonne, IL
May 4, 2000	APSUO Steering Committee Meeting
July 12, 2000	APSUO Steering Committee Meeting
July 14, 2000	Research Directorate Meeting
July 30-August 4, 2000	SPIE 45 th Annual Meeting, International Symposium on Optical Science and Technology, San Diego, CA
August 8-12, 2000	8 th International Conference on Electronic Spectroscopy and Structure, Berkeley, CA
August 21-25, 2000	7 th International Conference on Synchrotron Radiation Instrumentation, Berlin, Germany
October 19, 2000	APSUO Steering Committee Meeting
October 20, 2000	Research Directorate Meeting

APS “Generations”

Family ties bring generations together at the APS



Keeping it in the family: Jack, Mike, and Gene Jagger (l to r, left photo), and George and John Mavrogenes (l to r, photo below).



Gene Jagger, the youngest of *three* generations of Jagers at the APS, worked as a summer appointee at GeoSoilEnviro (GSE) CARS-CAT (sector 13) assisting in beamline construction and supporting beamline activities. Gene, a 1999 honor student graduate of Westmont High School, was named the school's 1999 Athlete of the Year and was the first male student to participate in state finals in three different sports (cross country, wrestling, and track) in the same year. Gene is now attending Northern Illinois University as an engineering major.

Mike Jagger (Gene's father) came to Argonne from Fermilab in May 1990 and worked in the High Energy Physics Division. He later transferred to XFD's Insertion Device Group, working first at the ID test facility, and later on beamline construction for sector 2. In 1997, Mike joined GSECARS-CAT and is now involved with beamline construction and other support activities.

Jack Jagger (Mike's father) came to the APS from Fermilab in September of 1989 as group leader for the APS Magnet Group. The Magnet Group was responsible for the design and fabrication of the APS magnets. Jack currently works with planning and scheduling in

the Mechanical Systems Group of the Accelerator Systems Division.

The father and son team of George and John Mavrogenes has also brought a multi-generational flavor to the APS. George came to ANL's Chemistry Division in 1958 as one of the original Senior Scientists working under Yang Cho (who is now Technical Director for the Spallation Neutron Source at Oak Ridge National Laboratory). George was responsible for the original conceptual design report for the APS accelerator. During his tenure at the APS, he became the linac group leader and then an associate division director. George retired from the Laboratory in 1995.

John Mavrogenes (George's son) came to the APS in February 1999 as a collaborator with The University of Chicago to work at CARS-CAT studying rock inclusions. John is a faculty member in the Geology Department of the Research School of Earth Sciences at the Australian National University, Canberra, Australia. ▽

APS 2000 Operations Schedule

The Beamline Operations Information page on the WWW maintains up-to-date calendars and schedules for APS operations. The home page at <http://www.aps.anl.gov/xfd/operations/welcome.html> provides links to useful information including the beamline operations schedule for the current operating cycle, the long-range operating calendar, the on-shift floor coordinator schedule, schedule archives, and more.

This schedule represents the most up-to-date information available at printing time. ↴

January						
M	T	W	Th	F	Sat.	Sun.
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

February						
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28	29					

March						
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27	28	29	30	31		

April						
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May						
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29*	30	31				

June						
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26	27	28	29	30		

July						
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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August						
M	T	W	Th	F	Sat.	Sun.
	1	2	3	4	5	6
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

September						
M	T	W	Th	F	Sat.	Sun.
				1	2	3
4*	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Key			
	Start Up/Machine Studies		User Operations
	Scheduled Maintenance	*	Laboratory Holiday

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* All area codes are 630