REED COLLEGE *Portland, Oregon 97202*

REACTOR FACILITY

October 2, 2006

Document Control Desk
US Nuclear Regulatory Commission
Washington, DC 20555

Docket 50-288

Enclosed is Reed College Reactor's Annual Report.

This has been another good year. We continue to make progress on many of our long term projects. Details are shown in the report.

Please feel free to contact me for additional information.

Regards,

Stephen G. Frantz
Director, Reed College Reactor

A020

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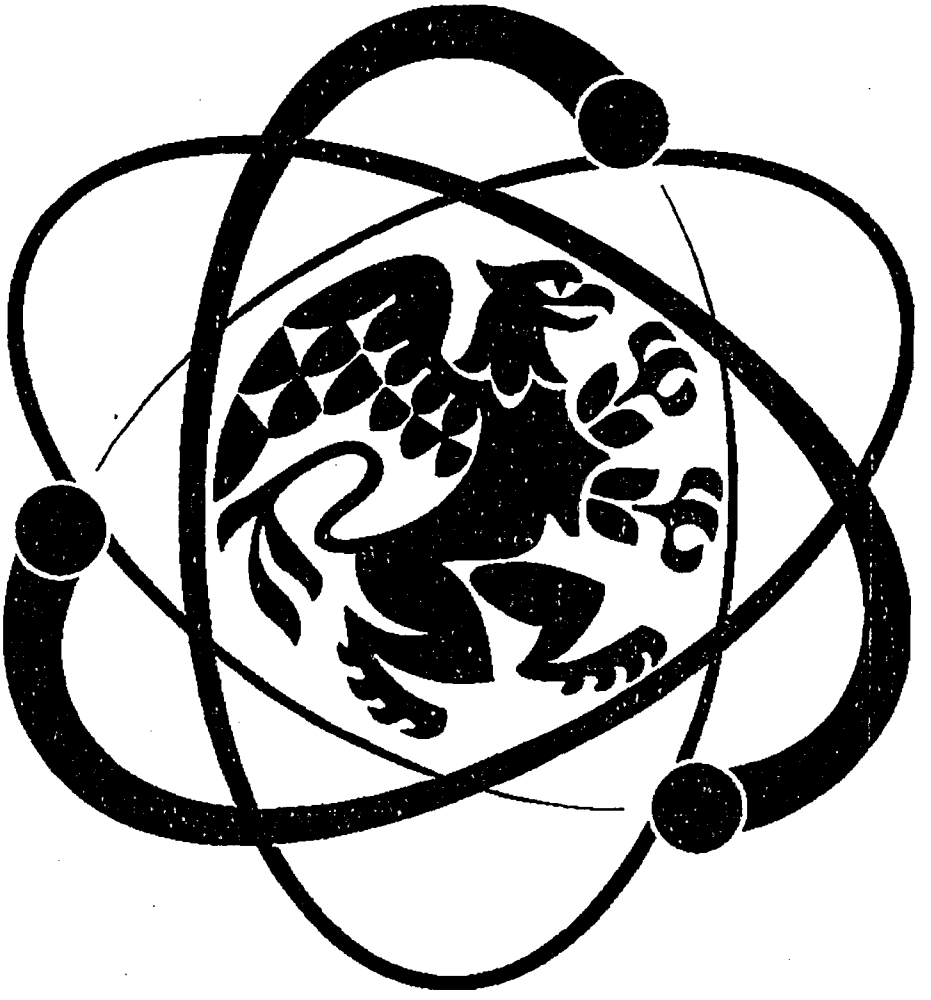
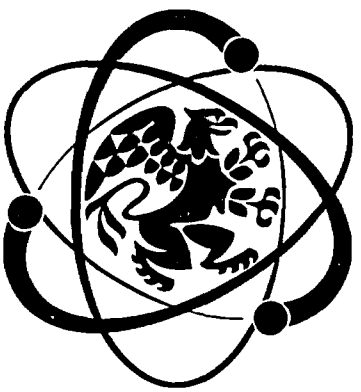
# REED RESEARCH REACTOR ANNUAL REPORT



September 1, 2005 -- August 31, 2006

# REED RESEARCH REACTOR ANNUAL REPORT



September 1, 2005 -- August 31, 2006

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Director, Reed Research Reactor
Program Director, Nuclear Science
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# OVERVIEW

This report covers the period from September 1, 2005 to August 31, 2006, and is intended to fulfill the reporting requirements of the U.S. Nuclear Regulatory Commission, the U.S. Department of Energy, and the Oregon Department of Energy including:

- U. S. Nuclear Regulatory Commission, License No. R-112 (Docket 50-288)
- Oregon Office of Energy Rule No. 345-030-010
- U. S. Department of Energy Reactor Sharing Grant No. DE-FG07-02ID14387
- U. S. Department of Energy Reactor Instrumentation Grant No. DE-FG07-04ID14573

We specifically wish to thank other funding sources including:

Portland General Electric

Concordia University

Reed College operates a Triga Mark I reactor with zirconium hydride/uranium fuel elements. The fuel elements are in a circular grid array at the bottom of a 25-foot-deep tank of water and are surrounded by a graphite reflector. The fuel is enriched to 19.9% in uranium-235.

The Reed College Research Reactor has been a resource for research and educational projects in the Portland area since its establishment in 1968. The main uses of the Reed Research Reactor are instruction and research, especially in the field of trace-element analysis. In addition to providing student research opportunities, the reactor staff works to educate the surrounding community on the principles of nuclear energy and radiation safety.

There were 2818 individual visits to the Reactor Facility during the year. Most were students in classes at Reed College or area universities, colleges, and high schools. Including tours and research conducted at the facility, the Reed Research Reactor contributed to the educational programs of 6 colleges and universities in addition to 12

pre-college groups. The reactor was operated 340 times on 120 days. The thermal energy produced was 42 megawatt-hours.

The reactor staff consists of a Director, an Associate Director, a contract Health Physicist, and Reed College undergraduate students who are licensed by the Nuclear Regulatory Commission as reactor operators or senior reactor operators. As this report is being written the licensed operating staff consists of 21 women and 29 men. During the reporting period, all 16 reactor operator candidates passed their NRC exams and all 11 senior reactor operator candidates passed their NRC exams.

There were no radiation exposures to individuals in excess of one percent of the limit during the year. There were no releases of liquid radioactive material from the facility and airborne releases were well within regulatory limits. There was one shipment of radioactive waste.

The Nuclear Regulatory Commission conducted their annual inspection during November 2005. There were no violations or concerns. There were no follow up items.

# PEOPLE

## Facility Staff

During the period September 1, 2005 to August 31, 2006, the facility staff consisted of:

| | |
|---|---|
| *Reactor Director:* | Stephen Frantz (4/94 – Present) |
| *Associate Director:* | Susan Beaver (7/06 – Present) |
| | Rachel Barnett (5/03 – 6/06) |
| *Reactor Supervisor:* | Craig Wagner (8/06 – Present) |
| | Elliot Naidus (8/05 – 6/06) |
| *Training Supervisor:* | Juliana Arrighi (6/06- Present) |
| | Jessica Griffith (5/04- 6/06) |
| *Radiation Safety Officer:* | Kathleen Fisher (1/03 – Present) |
| *Contract Health Physicist:* | Marshall Parrott (8/91 – Present) |

*Senior Reactor Operators (SRO):*

| | |
|---|---|
| Carl | Anderson |
| Juliana | Arrighi |
| Drew | Atwater |
| Andre | Bach |
| Rachel | Barnett |
| Susan | Beaver |
| Rachel | Bond |
| Quincy | Cardinale |
| David | de Regt |
| Stephen | Frantz |
| Hilary | Gray |
| Ben | Greenspan |
| Jessica | Griffith |
| Jesse | Hallett |
| Vanessa | Holfeltz |
| Cindy | Joe |
| Beverly | Lau |
| Kristen | Lavavej |
| Grant | Meadors |
| Tracy | Mehoke |
| Marianna | Mullens |
| Elliot | Naidus |
| Derek | Oldridge |
| Alton | Sartor |
| Rebecca | Schoenberg-Jones |
| Julia | Schornack |
| Zach | Schultz |
| Craig | Wagner |
| Gillian | Woodruff |

*Reactor Operators (RO):*

| | |
|---|---|
| Robin | Bjorkquist |
| Steven | Case |
| Michael | Chaffin |
| Tom | Chartrand |
| Tiffany | Cook |
| Asher | Davidson |
| William | Draper |
| Allison | Edgar |
| Ben | Fischer |
| Michael | Flashman |
| Ryan | Gersovitz |
| Edward | Griffith |
| Alex | Gurfinkel |
| Jeremy | Harper |
| Matthew | Jemielita |
| Sarah | Kemp |
| Molly | King |
| Matthew | King |
| Jordan | Kohn |
| Judith | Levine |
| Christine | Lewis |
| Eric | Lindsey |
| Anna | McKee |
| Joseph | Parmalee |
| Alex | Ragus |
| Zoe | Rem |
| Will | Rosenbaum |
| Jacob | Schwartzman |
| Emma | Seward |
| Griffen | Thoma |
| David | Williams |
| Trevor | Young |

The list of operators includes everyone who held a license at any time during the reporting period. ROs who upgrade their licenses to SRO during the reporting period are listed under SRO. All staff members are Reed College undergraduate students except Mr. Frantz, Ms. Beaver, Ms. Barnett, Ms. Fisher, and Dr. Parrott.

As this report is being written there are 9 women and 20 men with Reactor Operator licenses and 12 women and 9 men with Senior Reactor Operator licenses.

## Reactor Review Committee

The Reed Research Reactor has two oversight committees: the Radiation Safety Committee and the Reactor Operations Committee. Together they comprise the Reactor Review Committee. The Radiation Safety Committee is concerned with emergency preparedness, health physics, radiation safety, physical security, environmental impact, and the interface between the Reed Research Reactor, Reed College, and the surrounding community. The Reactor Operations Committee deals with the day-to-day operations of the reactor, reactor maintenance, reactor safety, operator training, and operator requalification. The membership of the committees during the reporting period is shown below:

***Radiation Safety Committee***

Tom Meek - Chair *(Radiation Protection Manager, Trojan Nuclear Power Plant)*
Martha Dibble *(Neighborhood Resident)*
Wayne Lei *(Environmental Director, Portland General Electric)*
Kathleen Fisher *(Director, Reed Environmental Health and Safety)*

***Reactor Operations Committee***

Steve Reese - Chair *(Radiation Center Director, Oregon State University)*
Johnny Powell *(Physics Faculty, Reed College)*
Daniel Gerrity *(Chemistry Faculty, Reed College)*
Juliet Brosing *(Physics Faculty, Pacific University)*
Lily Cool *(Reed Alum)*

***Ex Officio (without vote) on Both Committees:***

Peter Steinberger *(Dean of the Faculty, Reed College)*
Stephen Frantz *(Director, Reed Research Reactor)*
Rachel Barnett *(Associate Director, Reed Research Reactor)*
Marshall Parrott *(Contract Health Physicist)*
Elliot Naidus *(Reactor Supervisor)*
Jessica Griffith *(Reactor Training Supervisor)*

# FACILITIES

## Reactor Facility

In addition to the reactor, the Reed College has a radiochemistry lab. The equipment available at the reactor facility includes high purity germanium gamma spectrometers, alpha spectrometers, a whole body counter, gas flow proportional counters, ion chambers, beta counters, Geiger Muller tubes, neutron detectors, alpha detectors, and thermo luminescent dosimeter readers. These instruments are used for experiments and training in nuclear science and radiation detection. Two hand and shoe monitors are in the control room. A liquid scintillation detector serves the campus radioisotope committee. The reactor facility has several systems for performing irradiations, described below.

## Rotating Specimen Rack Facility

The rotating specimen rack ("lazy susan") is located in a well on top of the graphite reflector surrounding the core. The rack consists of a circular array of 40 tubular receptacles, each of which can accommodate two irradiation tubes. Vials holding up to 17 ml (four drams) are used in this system. Samples are loaded in the specimen rack prior to the start-up of the reactor. The rack automatically rotates during irradiation to ensure each sample receives the same neutron flux. Typically, researchers use the rotating rack when long irradiation times (generally greater than five minutes) are required. The approximate thermal neutron flux in a rotating rack position at full power is $1.7 \times 10^{12}$ n/cm$^2$s with a cadmium ratio of 6. The specimen rack can be used for gamma irradiations (approximately 8 Rad/min) when the reactor is shutdown.

## Pneumatic Transfer System

The pneumatic transfer system ("rabbit") consists of an irradiation chamber in the outer F-ring of the core and its associated pump and piping. This allows samples to be transferred in and out of the reactor core very rapidly while the reactor is at power.

Routine use of the pneumatic transfer system involves placing samples into vials, which in turn are placed in special capsules known as "rabbits." The capsule is loaded into the system in the laboratory next to the reactor and is then transferred pneumatically into the core-irradiation position. At the end of a predetermined time the sample is transferred back to the receiving terminal, where it is removed for measurement. The transfer time from the core to the terminal is about seven seconds, making this method of irradiating samples particularly useful for experiments involving radioisotopes with short half-lives. The flux in the core terminal is approximately $5 \times 10^{12}$ n/cm$^2$s when the reactor is at full power.

## In-Core Facilities

The central thimble is a water-filled irradiation chamber about 3 cm in diameter. It provides the highest available neutron flux, about $1x10^{13}$ n/cm$^2$s. Special sample holders are used in the central thimble to provide maximum flexibility in experiment design.

A fuel replacement source holder assembly can also be used as an irradiation facility. The chamber fits into a fuel-element position within the core itself. It holds only one specially positioned irradiation container 7.5 cm in length and 2.5 cm in diameter.

Foil-insertion holes, 0.8 cm in diameter, are drilled at various positions through the grid plates. These holes allow inserting special holders containing flux wires into the core, to obtain neutron flux maps of the core.

## In-Pool Facilities

Near core, in-pool irradiation facilities can be arranged for larger samples. Neutron fluxes will be lower than in the lazy susan and will depend on the sample location.

An iridium gamma irradiator is also in the reactor pool for gamma only irradiations.

## Beam Facilities

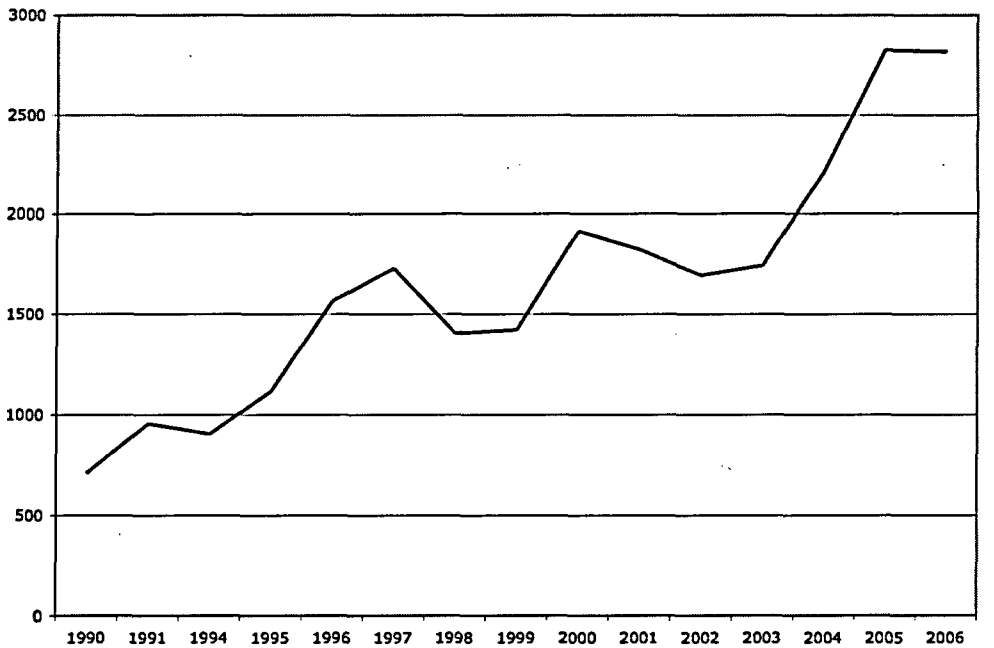
The central thimble can be evacuated with gas, producing a vertical neutron beam. This beam can be used to generate directional neutron flux, or for limited irradiations above the tank. Prompt gamma analysis and neutron radiography can be done. The flux above the beam exit is approximately $1x10^6$ n/cm$^2$s when the reactor is at full power.

# USERS

## Reactor Visitors

A total of 2818 individuals visited the Reed Research Reactor during the year, as derived from the visitor log - Entry List B. Individuals who visited more than once are counted for each visit. Visitors include all individuals who are not listed as facility staff. The visitors included 643 who were in programs funded in part by the U.S. DOE Reactor Sharing program. A large percentage of these were students in classes at area colleges and schools as discussed below. A graph of the history of visitor attendance is shown in Figure 1, and a list for the current year is included as Appendix A.

**Figure 1 - Reed Research Reactor Visitors**



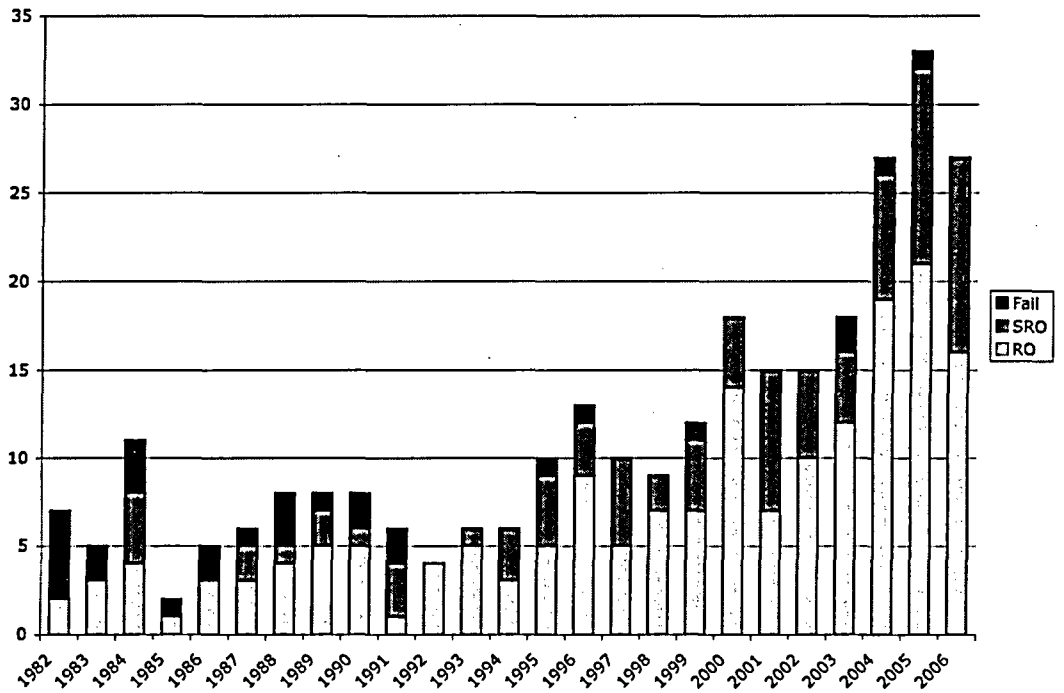

## Reactor Operations Seminar

The Reed Research Reactor conducts an annual seminar series for students from Reed and other area educational institutions. This non-credit course serves as an introduction to nuclear reactor theory, health physics, and reactor operation. Some of the students continue with in-depth reactor operator training and subsequently apply for a reactor operator license. If successful, the individual may be hired to operate the reactor. In addition, existing reactor operators may take the NRC senior reactor operator exam to upgrade their licenses.

During the reporting period, 16 out of 16 reactor operator candidates passed their NRC exams and 11 out of 11 senior reactor operator candidates passed their NRC exams. This year, for the first time, we put a limit on the number of reactor operator candidates.

Historically students who fail the NRC exam only fail one section and they are allowed to retake that section later. Figure 2 is a graph of the number of license application each year showing how many new RO and SRO licenses were awarded at Reed and how many failed to obtain a license.

**Figure 2 - Reed Research Reactor License Exam Results**




## Nuclear Science Consortium

In order to better use the resources of the Reed Research Reactor, several area colleges and universities established the Nuclear Science Consortium of the Willamette Valley in 1970. Funding for the Consortium has been derived from Reactor Use Sharing Grants of the U.S. Department of Energy. This made the facility available without charge to classroom groups and unfunded research projects for consortium members.

The following institutions have participated in facility tours, experiments, and research projects in the reporting period.

COLLEGE TOURS/USERS

- Concordia University
- Lewis and Clark College
- Linfield College
- Pacific University
- Portland Community College
- Warner Pacific College

PRE-COLLEGE TOURS/USERS

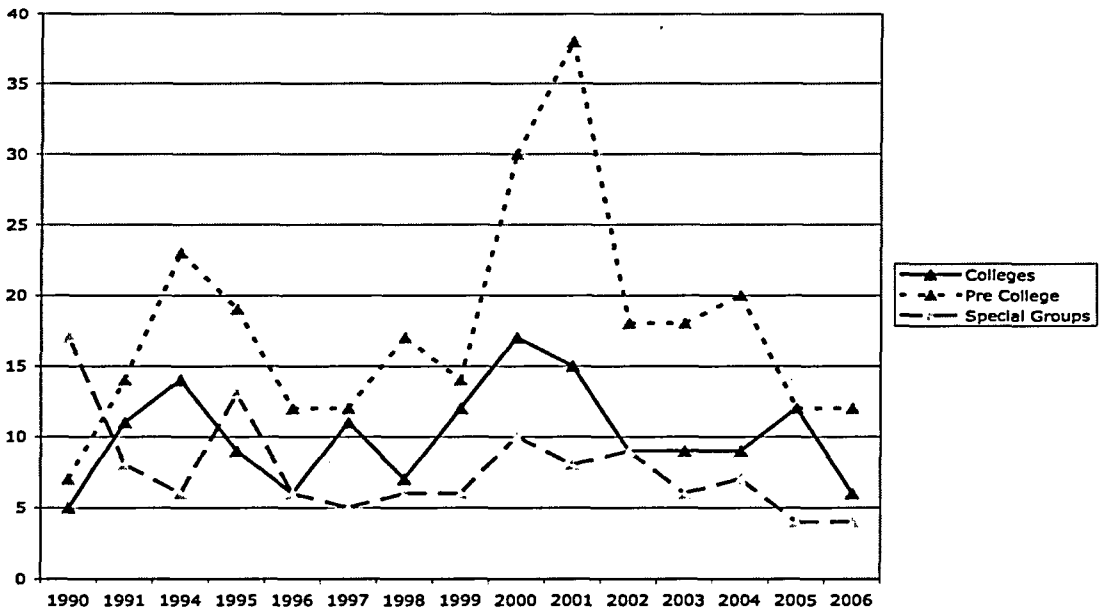
- Cleveland High School
- David Douglas High School
- Lincoln High School
- New Urban High School
- Oregon Episcopal School
- Rex Putnam High School
- Waldorf High School
- West Linn High School

SPECIAL GROUPS

- American Chemical Society
- Advocates for Women in Science, Engineering, and Math
- Saturday Academy

Figure 3 is a graph showing the history of colleges, pre-college groups, and special groups.

**Figure 3 – Colleges, Pre-College Groups, and Special Groups**




Many reactor tours include hands-on use of facility equipment to conduct experiments in radiation science, health physics, and nuclear physics. A typical lab involves determining the background of a Geiger Muller scalar system and then determining the half-life of a sample of radioactive material. College classes are generally more closely tailored to the individual interests and needs of the Consortium faculty member involved. Experiments include more direct use of the reactor itself by the students, more detailed analysis of materials, and emphasize the incorporation of other classroom activities as much as possible.

Several special programs for gifted children use the reactor for projects. These are designed to enrich their educational program and prepare them for college. Some of the groups who use the reactor target minority and disadvantaged youth who are historically under-represented in science professions.

## High School Student Projects

The Reed Research Reactor continues to be used in independent science projects initiated by students from several Oregon and Washington State high schools.

## Pacific University Modern Physics Lab

Each year the Modern Physics Lab at Pacific University spends lab sessions at the reactor. The students do several labs including basic health physics, sub-critical multiplication, and neutron activation analysis.

## Concordia University

The reactor provides training and experiments involving radiation, radioactive material, environmental sampling, and trace element analysis for the Environmental Remediation & Hazardous Material Management Program (ERHMM) and General Chemistry at Concordia University

## Scaler Kits

Through the generosity of Portland General Electric, the reactor lends out kits containing a Geiger counter, a scaler, and some small exempt sources to local high schools for their use in their Advanced Placement Physics Classes.

## Reed Classes

- Chemistry 271 students used neutron activation analysis to determine chemical composition of an unknown compound.
- Chemistry 101 students determined the half-lives of an activated silver dime.
- Two Reed students used the reactor as part of their thesis.

## Industrial and Commercial Applications

The Reed Research Reactor is available for industrial or commercial concerns when it does not conflict with our educational goals. As in the past, the primary operations involved neutron activation analysis of materials or environmental samples. The facility also provides radiation protection training to interested parties and schools in the area.

# REACTOR OPERATIONS

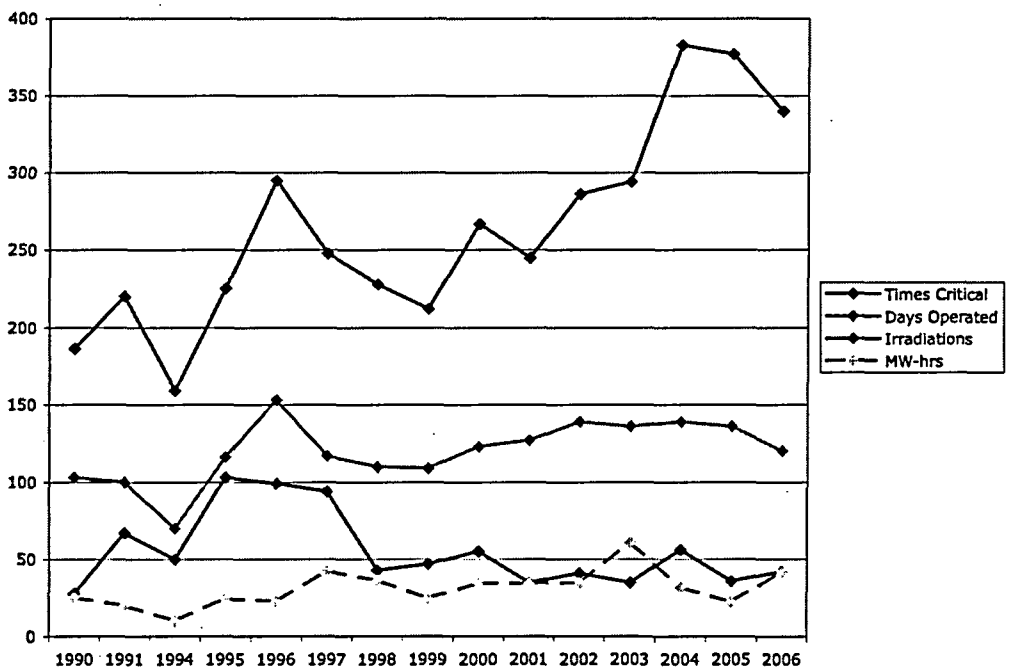
## Operations

During the year the reactor was taken critical 340 times on 120 days. The total energy produced was approximately 42 megawatt-hours. Operating history by month appears in Table A. A history of the data is shown in Figure 4.

**Table A - Operating History**

| | Times Critical | Days Operated | MW-hrs |
|---|---|---|---|
| **Sep.** | 39 | 10 | 1.92 |
| **Oct.** | 49 | 14 | 1.38 |
| **Nov.** | 28 | 11 | 6.86 |
| **Dec.** | 23 | 8 | 3.91 |
| **Jan.** | 23 | 13 | 2.33 |
| **Feb.** | 26 | 11 | 4.62 |
| **Mar.** | 33 | 9 | 3.60 |
| **Apr.** | 46 | 14 | 7.68 |
| **May** | 31 | 10 | 4.22 |
| **Jun.** | 5 | 4 | 0.46 |
| **Jul.** | 18 | 8 | 2.94 |
| **Aug.** | 19 | 8 | 1.84 |
| **Total** | 340 | 120 | 41.76 |

**Figure 4 – Operations**



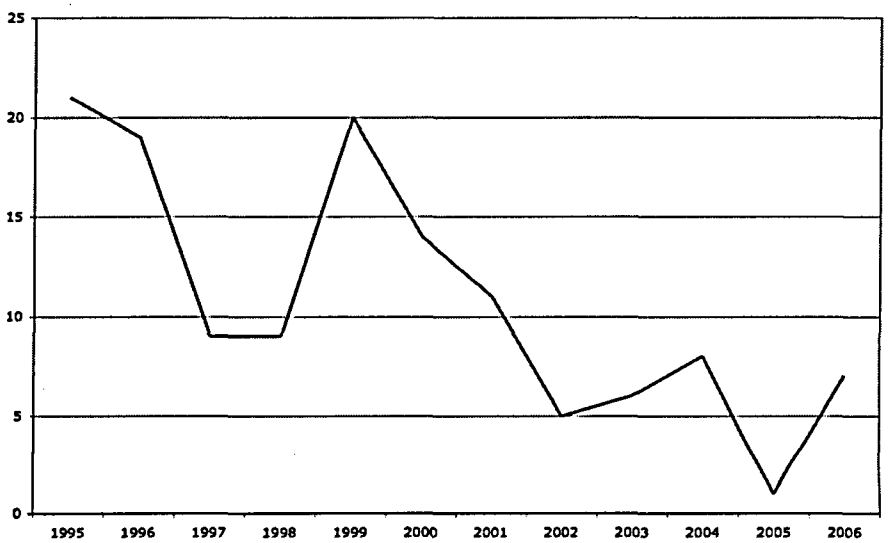
## Unplanned Reactor Shutdowns

There were seven inadvertent reactor shutdowns (scrams) as shown in Table B; they were all explained. The number of unplanned reactor shutdowns is consistent with the past as shown in Figure 5.

**Table B - Unplanned Reactor Shutdowns**

| Date | Scram Type | Cause Of Scram |
|---|---|---|
| 11/21/05 | Loss of AC | Electrical power was lost to campus |
| 11/921/05 | Linear | Operator inattention |
| 2/16/06 | Linear | Linear channel was left in manual ranging |
| 2/28/06 | Percent Power | Accidentally pressed the Test button on the Percent Power |
| 3/15/06 | Linear | Operator inattention |
| 5/06/06 | Linear and Percent Power | Operator inattention |
| 5/06/06 | Linear | Operator inattention |

**Figure 5 – Unplanned Shutdowns**




## Security

There were significant security reviews of the facility, both internal and external. The physical security barriers and procedures were modified and improved.

# REACTOR MAINTENANCE

## Significant Maintenance

Routine equipment checks are conducted by reactor staff members on a daily, weekly, bimonthly, semiannual (January and July) and annual (January) basis as required by facility procedures. Reed College maintenance personnel assist with routine preventative maintenance to auxiliary equipment. Significant maintenance operations that were not part of a regular schedule are listed in Table D.

**Table D - Significant Maintenance Operations**

| Date | Maintenance |
|---|---|
| 8/22/05 | Installed Automatic Rod Control |
| 9/8/05 | Changed primary filter |
| 9/26/05 | Changed primary filter |
| 9/30/05 | Placed iridium gamma source in the core |
| 10/21/05 | Changed primary filter |
| 10/25/05 | Moved APM and GSM from the loft to the hallway |
| 10/31/05 | Changed primary filter |
| 10/31/05 | Installed new grounding wires in the console |
| 11/7/05 | Adjusted Log Channel test circuit to enable testing of source interlock |
| 11/9/05 | Changed primary filter |
| 1/6/06 | Cleaned the Lazy Susan with mineral spirits |
| 1/16/06 | Changed the primary demineralizer tanks resin |
| 1/22/06 | Changed primary filter |
| 2/27/06 | Changed primary filter |
| 4/10/06 | Replaced the air hoses on the pneumatic transfer system |
| 4/30/06 | Changed primary filter |
| 7/7/06 | Changed primary filter |
| 7/26/06 | Installed new digital RAMs and relocated the old ones |
| 8/7/06 | Changed primary filter |
| 8/9/06 | Replaced primary conductivity meter with a digital one |
| 8/15/06 | Replaced secondary water meter and computer |

## Safety Reviews Approved by Reactor Review Committee

Title: **New Emergency Implementation Procedures**

Date: October 24, 2005

Summary of Proposed Change:

The Emergency Implementation Procedures (EIPs) will be changed from a two-column format to a tabbed format.

The new format places all the steps on one sheet for the Emergency Coordinator (EC) to see at once. The information that used to be in the right hand column will be moved to a tab that has more details and pictures for any step that applies.

Advantages of the new format:

1. All the steps are visible at once. No page turning is required until a condition is met.
2. Multiple copies of the flow sheet may be made for others to follow along.
3. Each action step is a separate tab that can be removed for implementation.
4. Since the actions steps don't have to fit in the right hand column, more details and photographs can be included.

Disadvantages of the new format:

1. Significant retraining will be required.
2. When a condition applies, the EC must open that tab rather than just go to the right hand column. The EC may go to the wrong tab. The tabs are lettered and color coordinated to minimize this.
3. The EC may loose his/her place going back and forth between tabs. Check off boxes have been provided to the flow sheet to minimize this.

Title: **Move the APM and GSM to the exit corridor**

Date: October 24, 2005

Summary of Proposed Change:

The proposed procedure change will move the Air Particulate Monitor (APM) and Gaseous Stack Monitor (GSM) from the loft to the exit corridor. The purpose is to put them in a more controlled environment and to facilitate access.

We have had problems with the APM since installation, and now the GSM seems to be having problems. We have sent them back to Eberline repeated times, and they work perfectly there. We have installed power conditioners and replaced the cables. The only remaining suggestion is that the temperature environment in the loft may not be suitable for the detectors. Moving them to the exit corridor (the hallway) will alleviate this.

Also, having the APM and GSM in the hallway will allow operator to perform the weekly and bimonthly checklists without having to enter the loft. They no longer have keys to the loft so this has become a problem.

The APM and GSM will be in the hallway rather than the reactor room to minimize background radiation and to allow access if the reactor room cannot be entered.

The increased sampling line run will not be an issue due to the isokinetic sampling probe that was installed.

The APM and GSM will be mounted on the drywall in the hallway, with plastic tubing running up into the loft. This is the same as the old manner of mounting so no difficulties are anticipated. The reactor staff will perform the changes.

Title: **Lazy Susan Cleaning**

Date: November 28, 2005

Summary of Proposed Change:

The proposed procedure will clean the lazy susan (LS) with the solvent mineral spirits (paint thinner).

Three gallons of the solvent will be poured into the lazy susan. The LS will be rotating overnight to dissolve the oil. Then the contaminated solvent will be pumped into a shielded container. The waste will be handled as described below. The procedure is attached.

The LS is an air filled rack assembly that is isolated from the pool water, so there is no possible interaction between the solvent and the reactor water. Mineral spirits is compatible with metals, plastics, and the pool water if any were to get into the pool. The only significant activation product is sodium (15 hour half-life), although the LS oil will have long-lived cobalt and selenium isotopes. This method was used successfully at the Kansas State University Reactor in 2003.

The pump and tubing will be on absorbent paper and will be checked frequently for leaks. Radiation monitors will check for air contamination and for high radiation fields. Lab coats, gloves, shoe covers, and goggles will be worn when transferring the solvent. Personal dosimetry is always worn in the reactor room. The container will be shielded and will not be positioned over the reactor pool. When Kansas State performed the procedure, the highest measured dose rate was 10 mR/hour.

The used solvent will be filtered to remove the radioactive particles. The solvent will then be stored for use in cleaning the LS in the future.

This procedure will be added to SOP-83 with lessons learned when completed.

# RADIATION PROTECTION

## Personnel Dosimetry

During the period July 1, 2005 to June 30, 2006 personnel dosimeters were issued to 54 Reed students and staff, and to one contractor. Since dosimeters are changed on a calendar quarter schedule, this period is the closest to the reporting period. Individuals were issued beta-gamma sensitive ring badges and whole-body badges. The Director and Associate Director were issued beta-gamma-neutron sensitive dosimetry.

During the year the largest annual whole body dose was 13 mrem deep dose equivalent. The largest annual extremity dose was 120 mrem shallow dose equivalent. Both of these were staff members (not students). No one exceeded one percent of the federal limits.

## Fixed Area Dosimetry

Radiation levels are continually monitored to provide an indication of the average radiation levels in the reactor bay and dose outside the facility. This year areas dosimeters were also placed in the sample counting room and the control room. All dosimeters monitor beta and gamma radiation. Two locations also measure neutron dose.

The deep dose equivalent radiation measured by fixed dosimeters during the period July 1, 2005 to June 30, 2006 are shown in Table E. Since dosimeters are changed on a calendar quarter schedule, this period is the closest to the reporting period.

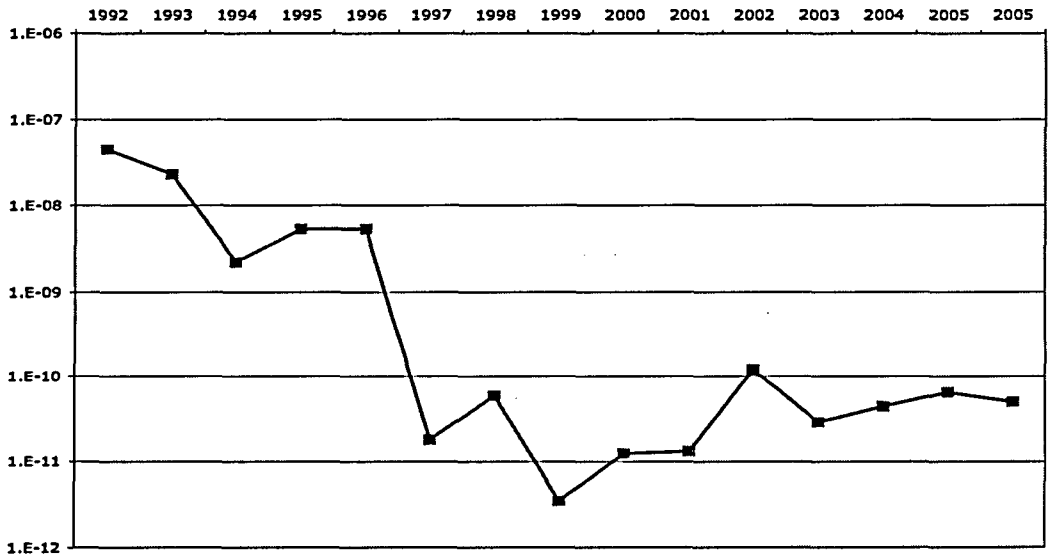
**Table E - Area Radiation Dosimeters**
(doses are in mrem per calendar quarter)

| Location | Height (m) | Radiation Detected | Jul 1 - Sep 30 | Oct 1 - Dec 31 | Jan 1 - Mar 31 | Apr 1 - Jun 30 | Total |
|---|---|---|---|---|---|---|---|
| East Wall | 1.5 | β, γ, n | 10 | 36 | 68 | 39 | 153 |
| North Wall | 1.6 | β, γ | 23 | 33 | 96 | 53 | 205 |
| West Wall | 1.0 | β, γ n | 28 | 70 | 57 | 21 | 176 |
| South Wall | 1.6 | β, γ | 10 | 30 | 31 | 21 | 92 |
| North Wall | 2.3 | β, γ | 5 | 28 | 34 | 23 | 90 |
| North Outside | 2.8 | β, γ | 0 | 16 | 35 | 23 | 74 |
| Roof Outside | 0.4 | β, γ | 0 | 0 | 0 | 0 | 0 |
| East Outside | 1.5 | β, γ | 0 | 0 | 0 | 0 | 0 |
| South Outside | 0.4 | β, γ | 0 | 0 | 0 | 0 | 0 |
| Counting Room | 1.5 | β, γ | N/A | 26 | 0 | 0 | 26 |
| Control Room | 1.5 | β, γ | N/A | 62 | 56 | 47 | 165 |

## Gaseous Releases

The only routine release of gaseous radioactivity is from $^{41}Ar$ (1.83-hour half-life) and $^{16}N$ (7.13-second half-life). These come from activation of pool water and air in the pool water and in the irradiation facilities. For calendar year 2005, the average gaseous activity at the site boundary was $4.94 \times 10^{-11}$ $\mu$Ci/ml, which would deliver a dose to a member of the public of approximately 0.25 mrem, well below regulatory guidelines and constraints. Figure 6 shows the gaseous releases for each year.

**Figure 6 – Gaseous Releases Activity ($\mu$Ci/ml) at Site Boundary**




## Liquid Waste Releases

No liquid radioactive waste was released from the Reed Research Reactor during this report period.

## Solid Waste Disposal

There was one shipment of radioactive waste from the facility during this reporting period. Two drums were shipped to US Ecology in Richland, WA. The activity was 0.13 mCi and the volume was 18.45 $ft^3$.

## Environmental Sampling

Soil samples taken from the area surrounding the facility showed no activity above background. Water samples taken from the facility's secondary cooling system showed no activity above background. The nearby canyon was sampled for activation products and tritium, but showed no activity above normal background.

# APPENDIX A – VISITORS

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 9/2/05 | Reed | Startup | 1 | Reed |
| 9/2/05 | Reed | Shutdown | 2 | Reed |
| 9/7/05 | Reed | Startup | 1 | Reed |
| 9/7/05 | Reed | Weekly | 2 | Reed |
| 9/7/05 | Reed | Tour | 26 | Reed |
| 9/7/05 | Reed | Shutdown | 2 | Reed |
| 9/8/05 | Reed | Maintenance | 2 | Reed |
| 9/9/05 | Reed | Weekly | 3 | Reed |
| 9/11/05 | Reed | Weekly | 3 | Reed |
| 9/19/05 | Reed | Startup | 2 | Reed |
| 9/19/05 | Reed | Tour | 26 | Reed |
| 9/19/05 | Reed | Shutdown | 2 | Reed |
| 9/20/05 | Reed | Startup | 3 | Reed |
| 9/20/05 | Reed | Tour | 50 | Reed |
| 9/20/05 | United Fire | Maintenance | 1 | Reed |
| 9/20/05 | Reed | Operations | 2 | Reed |
| 9/20/05 | Reed | Shutdown | 1 | Reed |
| 9/20/05 | Pacific University | Tour | 9 | US DOE |
| 9/21/05 | Reed | Startup | 2 | Reed |
| 9/21/05 | Reed | Weekly | 3 | Reed |
| 9/21/05 | OEG | Maintenance | 2 | Reed |
| 9/21/05 | Reed | Tour | 23 | Reed |
| 9/21/05 | Reed | Shutdown | 2 | Reed |
| 9/21/05 | Reed | Training | 10 | Reed |
| 9/22/05 | Reed | Startup | 3 | Reed |
| 9/22/05 | Reed | Tour | 49 | Reed |
| 9/22/05 | Reed | Maintenance | 1 | Reed |
| 9/22/05 | Reed | Training | 28 | Reed |
| 9/22/05 | Reed | Shutdown | 1 | Reed |
| 9/23/05 | Reed | Startup | 2 | Reed |
| 9/23/05 | OEG | Maintenance | 4 | Reed |
| 9/23/05 | Reed | Maintenance | 1 | Reed |
| 9/23/05 | Reed | Tour | 28 | Reed |
| 9/23/05 | Reed | Training | 1 | Reed |
| 9/23/05 | Reed | Shutdown | 1 | Reed |
| 9/26/05 | Reed | Maintenance | 3 | Reed |
| 9/26/06 | OEG | Maintenance | 1 | Reed |
| 9/26/05 | Reed | Tour | 1 | Reed |
| 9/26/05 | Reed | Bimonthly | 4 | Reed |
| 9/27/05 | OEG | Maintenance | 2 | Reed |
| 9/27/05 | Reed | Maintenance | 3 | Reed |
| 9/27/05 | Reed | Weekly | 5 | Reed |
| 9/27/05 | Reed | Startup | 2 | Reed |
| 9/27/05 | Reed | Training | 14 | Reed |
| 9/29/06 | United Fire | Maintenance | 1 | Reed |
| 9/29/05 | Reed | Training | 22 | Reed |
| 9/29/05 | Reed | Shutdown | 1 | Reed |
| 9/30/05 | Reed | Startup | 1 | Reed |
| 9/30/05 | Reed | Tour | 19 | Reed |
| 9/30/05 | Reed | Maintenance | 3 | Reed |
| 9/30/05 | Reed | Training | 3 | Reed |
| 10/3/05 | Reed | Startup | 2 | Reed |
| 10/3/05 | Reed | Shutdown | 3 | Reed |
| 10/4/05 | Reed | Startup | 2 | Reed |
| 10/4/05 | Reed | Maintenance | 1 | Reed |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 10/4/05 | Reed | Shutdown | 2 | Reed |
| 10/5/05 | Reed | Startup | 2 | Reed |
| 10/5/05 | Reed | Weekly | 4 | Reed |
| 10/5/05 | Reed | Shutdown | 5 | Reed |
| 10/6/05 | Reed | Startup | 2 | Reed |
| 10/6/05 | Reed | Training | 2 | Reed |
| 10/6/05 | Reed | Shutdown | 2 | Reed |
| 10/7/05 | Reed | Startup | 2 | Reed |
| 10/7/05 | Reed | Maintenance | 1 | Reed |
| 10/7/05 | Reed | Training | 1 | Reed |
| 10/7/05 | Reed | Shutdown | 2 | Reed |
| 10/10/05 | US Crane and Hoist | Maintenance | 1 | Reed |
| 10/10/05 | Reed | Startup | 1 | Reed |
| 10/10/05 | United Fire | Maintenance | 1 | Reed |
| 10/10/05 | Reed | Shutdown | 1 | Reed |
| 10/11/05 | Reed | Startup | 3 | Reed |
| 10/11/05 | Lewis and Clark | Tour | 3 | US DOE |
| 10/11/05 | Pacific University | Tour | 9 | US DOE |
| 10/11/05 | Reed | Shutdown | 3 | Reed |
| 10/12/05 | Reed | Startup | 2 | Reed |
| 10/12/05 | Reed | Weekly | 2 | Reed |
| 10/12/05 | FBI | Tour | 8 | US DOE |
| 10/12/05 | Reed | Training | 14 | Reed |
| 10/13/05 | Reed | Startup | 1 | Reed |
| 10/13/05 | Reed | Training | 15 | Reed |
| 10/13/05 | American Chemical Society | Tour | 24 | US DOE |
| 10/14/05 | Reed | Startup | 1 | Reed |
| 10/14/05 | Reed | Training | 4 | Reed |
| 10/14/05 | Reed | Shutdown | 2 | Reed |
| 10/17/05 | Reed | Startup | 1 | Reed |
| 10/17/05 | Cleveland High School | Tour | 35 | US DOE |
| 10/17/05 | Reed | Tour | 1 | Reed |
| 10/17/05 | Reed | Maintenance | 1 | Reed |
| 10/17/05 | NRC | Inspection | 2 | Reed |
| 10/17/05 | Reed | Shutdown | 2 | Reed |
| 10/18/05 | NRC | Inspection | 2 | Reed |
| 10/18/05 | Reed | Startup | 2 | Reed |
| 10/18/05 | Cleveland High School | Tour | 34 | US DOE |
| 10/18/05 | Reed | Shutdown | 2 | Reed |
| 10/19/05 | Reed | Weekly | 2 | Reed |
| 10/19/05 | NRC | Inspection | 2 | Reed |
| 10/19/05 | Reed | Weekly | 1 | Reed |
| 10/19/05 | Reed | Shutdown | 1 | Reed |
| 10/21/05 | Reed | Training | 2 | Reed |
| 10/21/05 | Reed | Tour | 7 | Reed |
| 10/21/05 | Reed | Maintenance | 3 | Reed |
| 10/25/05 | Reed | Training | 5 | Reed |
| 10/26/05 | Reed | Maintenance | 15 | Reed |
| 10/26/05 | Reed | Weekly | 2 | Reed |
| 10/26/05 | United Fire | Maintenance | 1 | Reed |
| 10/28/05 | Reed | Maintenance | 4 | Reed |
| 10/31/05 | Reed | Maintenance | 2 | Reed |
| 11/1/05 | Reed | Startup | 3 | Reed |
| 11/2/05 | Reed | Tour | 2 | Reed |
| 11/2/05 | CSLA | Tour | 14 | US DOE |
| 11/2/05 | Reed | Shutdown | 1 | Reed |
| 11/2/05 | Reed | Weekly | 3 | Reed |
| 11/2/05 | Reed | Operations | 2 | Reed |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 11/2/05 | Reed | Training | 12 | Reed |
| 11/3/05 | Reed | Training | 17 | Reed |
| 11/4/05 | Reed | Tour | 63 | Reed |
| 11/4/05 | Reed | Shutdown | 1 | Reed |
| 11/5/05 | Reed | Startup | 2 | Reed |
| 11/5/00 | Reed | Tour | 20 | Reed |
| 11/5/05 | Reed | Shutdown | 2 | Reed |
| 11/8/05 | Reed | Maintenance | 1 | Reed |
| 11/8/05 | United Fire | Maintenance | 1 | Reed |
| 11/8/05 | ECI Camera | Maintenance | 1 | Reed |
| 11/9/05 | Reed | Weekly | 3 | Reed |
| 11/9/05 | Reed | Maintenance | 3 | Reed |
| 11/10/05 | Reed | Startup | 2 | Reed |
| 11/10/05 | Reed | Operations | 1 | Reed |
| 11/10/05 | Reed | Shutdown | 1 | Reed |
| 11/11/05 | Reed | Operations | 2 | Reed |
| 11/11/05 | Reed | Startup | 1 | Reed |
| 11/11/05 | PNW | Tour | 40 | US DOE |
| 11/11/05 | Reed | Tour | 5 | Reed |
| 11/11/05 | Reed | Operations | 1 | Reed |
| 11/11/05 | Reed | Shutdown | 3 | Reed |
| 11/14/05 | Reed | Startup | 2 | Reed |
| 11/14/05 | Reed | Operations | 4 | Reed |
| 11/14/05 | Reed | Shutdown | 2 | Reed |
| 11/14/05 | Reed | Tour | 4 | Reed |
| 11/15/05 | Reed | Startup | 2 | Reed |
| 11/15/05 | Reed | Operations | 1 | Reed |
| 11/15/05 | Reed | Shutdown | 2 | Reed |
| 11/16/05 | Reed | Operations | 3 | Reed |
| 11/16/05 | Reed | Bimonthly | 7 | Reed |
| 11/16/05 | Reed | Weekly | 2 | Reed |
| 11/16/05 | Reed | Training | 1 | Reed |
| 11/17/05 | Reed | Maintenance | 6 | Reed |
| 11/17/05 | Reed | Training | 1 | Reed |
| 11/18/05 | Reed | Maintenance | 5 | Reed |
| 11/21/05 | Reed | Startup | 1 | Reed |
| 11/21/05 | Reed | Training | 1 | Reed |
| 11/21/05 | Reed | Operations | 2 | Reed |
| 11/21/05 | Reed | Shutdown | 2 | Reed |
| 11/22/05 | Reed | Maintenance | 2 | Reed |
| 11/23/05 | Reed | Startup | 2 | Reed |
| 11/23/05 | Reed | Tour | 5 | Reed |
| 11/23/05 | Reed | Weekly | 4 | Reed |
| 11/23/05 | Reed | Training | 2 | Reed |
| 11/23/05 | Reed | Shutdown | 1 | Reed |
| 11/30/05 | Reed | Weekly | 2 | Reed |
| 11/30/05 | IB N/W | Maintenance | 1 | Reed |
| 11/30/05 | Reed | Training | 13 | Reed |
| 12/1/05 | Reed | Startup | 2 | Reed |
| 12/1/05 | Reed | Tour | 4 | Reed |
| 12/1/05 | United Fire | Maintenance | 1 | Reed |
| 12/1/05 | Reed | Operations | 2 | Reed |
| 12/1/05 | Reed | Training | 11 | Reed |
| 12/1/05 | Reed | Shutdown | 3 | Reed |
| 12/2/05 | PFB | Maintenance | 4 | Reed |
| 12/2/05 | Reed | Training | 4 | Reed |
| 12/3/05 | Reed | Training | 18 | Reed |
| 12/5/05 | Reed | Operations | 1 | Reed |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 12/5/05 | Reed | Shutdown | 2 | Reed |
| 12/6/05 | Reed | Operations | 5 | Reed |
| 12/6/05 | Reed | Startup | 1 | Reed |
| 12/6/05 | United Fire | Maintenance | 1 | Reed |
| 12/6/05 | Reed | Shutdown | 1 | Reed |
| 12/7/05 | Reed | Operations | 2 | Reed |
| 12/7/05 | Reed | Weekly | 4 | Reed |
| 12/7/05 | Reed | Training | 13 | Reed |
| 12/8/05 | Reed | Training | 13 | Reed |
| 12/8/05 | Reed | Operations | 2 | Reed |
| 12/9/05 | Reed | Maintenance | 6 | Reed |
| 12/9/05 | Reed | Training | 4 | Reed |
| 12/10/05 | Reed | Startup | 2 | Reed |
| 12/10/05 | Reed | Training | 4 | Reed |
| 12/10/05 | Reed | Tour | 10 | Reed |
| 12/10/05 | Reed | Shutdown | 4 | Reed |
| 12/13/05 | Reed | Maintenance | 2 | Reed |
| 12/13/05 | Reed | Training | 1 | Reed |
| 12/13/05 | Reed | Shutdown | 1 | Reed |
| 12/14/05 | Reed | Training | 6 | Reed |
| 12/15/05 | PFB | Tour | 14 | US DOE |
| 12/15/05 | Reed | Training | 4 | Reed |
| 12/15/05 | Reed | Operations | 1 | Reed |
| 12/16/05 | Reed | Startup | 1 | Reed |
| 12/16/05 | United Fire | Maintenance | 1 | Reed |
| 12/18/05 | PFB | Training | 4 | Reed |
| 12/18/05 | Reed | Operations | 1 | Reed |
| 1/3/06 | West Linn High School | Tour | 2 | US DOE |
| 1/3/06 | Reed | Maintenance | 3 | Reed |
| 1/4/06 | Reed | Maintenance | 5 | Reed |
| 1/4/06 | Reed | Tour | 1 | Reed |
| 1/5/06 | Reed | Maintenance | 5 | Reed |
| 1/6/06 | Reed | Maintenance | 4 | Reed |
| 1/9/06 | Reed | Maintenance | 24 | Reed |
| 1/9/06 | Reed | Operations | 23 | Reed |
| 1/10/06 | Reed | Maintenance | 9 | Reed |
| 1/10/06 | Reed | Operations | 31 | Reed |
| 1/10/06 | Reed | Training | 11 | Reed |
| 1/10/06 | Reed | Shutdown | 1 | Reed |
| 1/11/06 | Reed | Training | 19 | Reed |
| 1/11/06 | Reed | Operations | 22 | Reed |
| 1/11/06 | Reed | Weekly | 4 | Reed |
| 1/11/06 | Reed | Shutdown | 1 | Reed |
| 1/12/06 | Reed | Maintenance | 9 | Reed |
| 1/12/06 | Reed | Operations | 23 | Reed |
| 1/12/06 | Reed | Shutdown | 1 | Reed |
| 1/12/06 | Reed | Training | 5 | Reed |
| 1/13/06 | Reed | Startup | 3 | Reed |
| 1/13/06 | Reed | Maintenance | 20 | Reed |
| 1/13/06 | Reed | Operations | 7 | Reed |
| 1/13/06 | Reed | Training | 3 | Reed |
| 1/13/06 | Reed | Shutdown | 1 | Reed |
| 1/16/06 | Reed | Startup | 3 | Reed |
| 1/16/06 | Reed | Maintenance | 14 | Reed |
| 1/16/06 | Reed | Operations | 12 | Reed |
| 1/16/06 | Reed | Training | 2 | Reed |
| 1/16/06 | Reed | Shutdown | 1 | Reed |
| 1/17/06 | Reed | Training | 22 | Reed |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 1/18/06 | United Fire | Maintenance | 1 | Reed |
| 1/18/06 | Reed | Training | 10 | Reed |
| 1/18/06 | Reed | Maintenance | 14 | Reed |
| 1/18/06 | Reed | Startup | 5 | Reed |
| 1/18/06 | Reed | Weekly | 6 | Reed |
| 1/18/06 | Reed | Shutdown | 2 | Reed |
| 19-Jan | Reed | Training | 36 | Reed |
| 1/20/06 | Reed | Startup | 6 | Reed |
| 1/20/06 | Reed | Maintenance | 5 | Reed |
| 1/20/06 | Reed | Training | 1 | Reed |
| 1/20/06 | Reed | Shutdown | 2 | Reed |
| 1/22/06 | Reed | Startup | 3 | Reed |
| 1/22/06 | Reed | Maintenance | 2 | Reed |
| 1/22/06 | Reed | Training | 9 | Reed |
| 1/22/06 | Reed | Shutdown | 1 | Reed |
| 1/24/06 | Reed | Maintenance | 1 | Reed |
| 1/25/06 | Reed | Maintenance | 1 | Reed |
| 1/25/06 | Reed | Startup | 1 | Reed |
| 1/25/06 | Reed | Training | 19 | Reed |
| 1/25/06 | Reed | Shutdown | 2 | Reed |
| 1/25/06 | Reed | Weekly | 4 | Reed |
| 1/26/06 | Reed | Maintenance | 15 | Reed |
| 1/26/06 | Reed | Tour | 4 | Reed |
| 1/26/06 | Reed | Training | 1 | Reed |
| 1/27/06 | Reed | Maintenance | 1 | Reed |
| 1/27/06 | Reed | Startup | 1 | Reed |
| 1/27/06 | Portland Waldorf High School | Tour | 15 | US DOE |
| 1/27/06 | Reed | Tour | 1 | Reed |
| 1/30/06 | United Fire | Maintenance | 2 | Reed |
| 1/30/06 | Portland Fire | Training | 4 | Reed |
| 1/30/06 | Pinnacle Invest | Training | 2 | Reed |
| 1/31/06 | Reed | Training | 1 | Reed |
| 1/31/06 | Reed | Maintenance | 3 | Reed |
| 1/31/06 | Reed | Startup | 1 | Reed |
| 2/1/06 | Reed | Maintenance | 1 | Reed |
| 2/1/06 | Reed | Weekly | 1 | Reed |
| 2/1/06 | Reed | Startup | 1 | Reed |
| 2/2/06 | Reed | Startup | 4 | Reed |
| 2/2/06 | Reed | Shutdown | 3 | Reed |
| 2/6/06 | Reed | Training | 1 | Reed |
| 2/8/06 | Reed | Training | 4 | Reed |
| 2/8/06 | Reed | Startup | 1 | Reed |
| 2/8/06 | Reed | Shutdown | 1 | Reed |
| 2/9/06 | Reed | Maintenance | 1 | Reed |
| 2/9/06 | Reed | Training | 4 | Reed |
| 2/9/06 | Reed | Startup | 3 | Reed |
| 2/9/06 | Reed | Shutdown | 3 | Reed |
| 2/10/06 | Reed | Training | 3 | Reed |
| 2/10/06 | Reed | Tour | 11 | Reed |
| 2/10/06 | Reed | Shutdown | 2 | Reed |
| 2/11/06 | Reed | Training | 8 | Reed |
| 2/11/06 | Reed | Startup | 4 | Reed |
| 2/13/06 | Reed | Training | 2 | Reed |
| 2/14/06 | United Fire | Maintenance | 1 | Reed |
| 2/14/06 | Reed | Training | 2 | Reed |
| 2/15/06 | Reed | Training | 3 | Reed |
| 2/15/06 | Reed | Maintenance | 4 | Reed |
| 2/15/06 | Reed | Startup | 1 | Reed |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 2/15/06 | Reed | Shutdown | 1 | Reed |
| 2/16/06 | Reed | Startup | 1 | Reed |
| 2/16/06 | Warner Pacific College | Tour | 16 | US DOE |
| 2/16/06 | Reed | Shutdown | 1 | Reed |
| 2/17/06 | Reed | Training | 2 | Reed |
| 2/20/06 | Reed | Training | 3 | Reed |
| 2/20/06 | Reed | Shutdown | 1 | Reed |
| 2/21/06 | Reed | Startup | 3 | Reed |
| 2/21/06 | Rex Putnam High School | Tour | 33 | US DOE |
| 2/21/06 | Reed | Training | 3 | Reed |
| 2/21/06 | Reed | Shutdown | 2 | Reed |
| 2/22/06 | Reed | Startup | 1 | Reed |
| 2/22/06 | Reed | Weekly | 3 | Reed |
| 2/22/06 | Reed | Maintenance | 1 | Reed |
| 2/22/06 | Saturday Academy | Tour | 19 | US DOE |
| 2/22/06 | Reed | Tour | 3 | Reed |
| 2/22/06 | Reed | Shutdown | 1 | Reed |
| 2/22/06 | Reed | Training | 3 | Reed |
| 2/24/06 | Reed | Training | 4 | Reed |
| 2/27/06 | Reed | Maintenance | 2 | Reed |
| 2/27/06 | Reed | Training | 4 | Reed |
| 2/28/06 | Reed | Startup | 1 | Reed |
| 2/28/06 | United Fire | Maintenance | 1 | Reed |
| 2/28/06 | Reed | Training | 2 | Reed |
| 2/28/06 | Reed | Shutdown | 2 | Reed |
| 3/1/06 | Reed | Tour | 3 | Reed |
| 3/1/06 | Reed | Maintenance | 2 | Reed |
| 3/1/06 | Reed | Weekly | 3 | Reed |
| 3/1/06 | Reed | Training | 3 | Reed |
| 3/2/06 | Reed | Training | 4 | Reed |
| 3/3/06 | Reed | Maintenance | 2 | Reed |
| 3/3/06 | Reed | Training | 1 | Reed |
| 3/4/06 | Reed | Startup | 4 | Reed |
| 3/4/06 | Reed | Training | 4 | Reed |
| 3/6/06 | Reed | Training | 1 | Reed |
| 3/6/06 | Reed | Operations | 3 | Reed |
| 3/7/06 | Reed | Startup | 2 | Reed |
| 3/7/06 | Reed | Training | 4 | Reed |
| 3/7/06 | Reed | Maintenance | 4 | Reed |
| 3/8/06 | Reed | Weekly | 2 | Reed |
| 3/8/06 | Reed | Training | 1 | Reed |
| 3/8/06 | Reed | Operations | 2 | Reed |
| 3/9/06 | Reed | Training | 6 | Reed |
| 3/10/06 | Reed | Training | 5 | Reed |
| 3/11/06 | Reed | Tour | 2 | Reed |
| 3/11/06 | Reed | Training | 2 | Reed |
| 3/13/06 | Reed | Training | 1 | Reed |
| 3/14/06 | United Fire | Maintenance | 1 | Reed |
| 3/15/06 | Reed | Startup | 2 | Reed |
| 3/15/06 | Reed | Bimonthly | 3 | Reed |
| 3/15/06 | Reed | Weekly | 1 | Reed |
| 3/15/06 | Reed | Operations | 2 | Reed |
| 3/17/06 | Reed | Maintenance | 3 | Reed |
| 3/19/06 | Reed | Training | 6 | Reed |
| 3/19/06 | Reed | Startup | 1 | Reed |
| 3/21/06 | Reed | Startup | 1 | Reed |
| 3/21/06 | Reed | Training | 3 | Reed |
| 3/21/06 | New Urban High School | Tour | 26 | US DOE |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 3/21/06 | Reed | Shutdown | 1 | Reed |
| 3/22/06 | State of Oregon | Inspection | 2 | Reed |
| 3/22/06 | Portland Police Bureau | Inspection | 1 | Reed |
| 3/22/06 | Reed | Inspection | 2 | Reed |
| 3/22/06 | Saturday Academy | Tour | 7 | US DOE |
| 3/23/06 | Reed | Startup | 1 | Reed |
| 3/23/06 | Reed | Training | 3 | Reed |
| 3/23/06 | Reed | Tour | 8 | Reed |
| 3/24/06 | Reed | Training | 1 | Reed |
| 3/24/06 | Reed | Tour | 7 | Reed |
| 3/25/06 | Reed | Training | 5 | Reed |
| 3/27/06 | Reed | Training | 1 | Reed |
| 3/28/06 | Reed | Training | 3 | Reed |
| 3/28/06 | United Fire | Maintenance | 2 | Reed |
| 3/28/06 | Canberra | Maintenance | 2 | Reed |
| 3/29/06 | Reed | Weekly | 3 | Reed |
| 3/29/06 | Reed | Startup | 2 | Reed |
| 3/29/06 | Reed | Training | 4 | Reed |
| 3/29/06 | Reed | Shutdown | 1 | Reed |
| 3/30/06 | Reed | Startup | 2 | Reed |
| 3/30/06 | Reed | Training | 5 | Reed |
| 3/30/06 | Reed | Tour | 11 | Reed |
| 3/30/06 | Reed | Shutdown | 1 | Reed |
| 3/31/06 | Reed | Training | 5 | Reed |
| 3/31/06 | Reed | Tour | 10 | Reed |
| 3/31/06 | Reed | Shutdown | 1 | Reed |
| 3/31/06 | Reed | Operations | 2 | Reed |
| 4/3/06 | Reed | Operations | 1 | Reed |
| 4/4/06 | Reed | Training | 2 | Reed |
| 4/5/06 | Reed | Weekly | 2 | Reed |
| 4/5/06 | Reed | Startup | 3 | Reed |
| 4/5/06 | Reed | Maintenance | 2 | Reed |
| 4/5/06 | Reed | Shutdown | 1 | Reed |
| 4/6/06 | Reed | Training | 3 | Reed |
| 4/6/06 | Reed | Bimonthly | 1 | Reed |
| 4/6/06 | Reed | Maintenance | 1 | Reed |
| 4/7/06 | Reed | Training | 2 | Reed |
| 4/7/06 | Reed | Shutdown | 1 | Reed |
| 4/10/06 | Pacific University | Tour | 20 | US DOE |
| 4/10/06 | Reed | Shutdown | 1 | Reed |
| 4/10/06 | Reed | Training | 4 | Reed |
| 4/11/06 | United Fire | Maintenance | 1 | Reed |
| 4/11/06 | Concordia University | Tour | 20 | US DOE |
| 4/12/06 | Reed | Startup | 2 | Reed |
| 4/12/06 | Reed | Training | 1 | Reed |
| 4/12/06 | Reed | Weekly | 4 | Reed |
| 4/13/06 | Reed | Startup | 2 | Reed |
| 4/13/06 | Reed | Training | 6 | Reed |
| 4/13/06 | RAD | Tour | 22 | US DOE |
| 4/13/06 | Reed | Maintenance | 2 | Reed |
| 4/13/06 | Reed | Shutdown | 1 | Reed |
| 4/14/06 | Reed | Startup | 1 | Reed |
| 4/14/06 | Reed | Operations | 1 | Reed |
| 4/14/06 | RAD | Tour | 22 | US DOE |
| 4/14/06 | Reed | Maintenance | 4 | Reed |
| 4/14/06 | Reed | Training | 5 | Reed |
| 4/14/06 | Reed | Bimonthly | 1 | Reed |
| 4/14/06 | Reed | Tour | 1 | Reed |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 4/15/06 | Reed | Training | 5 | Reed |
| 4/15/06 | Reed | Operations | 2 | Reed |
| 4/15/06 | Reed | Maintenance | 1 | Reed |
| 4/17/06 | Reed | Startup | 1 | Reed |
| 4/17/06 | Reed | Tour | 14 | Reed |
| 4/17/06 | Reed | Training | 3 | Reed |
| 4/17/06 | Reed | Shutdown | 1 | Reed |
| 4/18/06 | Reed | Tour | 2 | Reed |
| 4/18/06 | Reed | Training | 3 | Reed |
| 4/19/06 | PFB | Training | 1 | Reed |
| 4/19/06 | Reed | Startup | 1 | Reed |
| 4/20/06 | Reed | Training | 3 | Reed |
| 4/20/06 | United Fire | Maintenance | 1 | Reed |
| 4/20/06 | Reed | Maintenance | 3 | Reed |
| 4/21/06 | Concordia University | Tour | 18 | US DOE |
| 4/21/06 | Reed | Maintenance | 3 | Reed |
| 4/21/06 | Reed | Tour | 1 | Reed |
| 4/21/06 | Reed | Shutdown | 1 | Reed |
| 4/24/06 | David Douglas High School | Tour | 32 | US DOE |
| 4/24/06 | Reed | Training | 2 | Reed |
| 4/25/06 | Reed | Training | 4 | Reed |
| 4/26/06 | Reed | Startup | 1 | Reed |
| 4/26/06 | American Nuclear Insurers | Inspection | 1 | Reed |
| 4/26/06 | David Douglas High School | Tour | 25 | US DOE |
| 4/26/06 | Reed | Training | 3 | Reed |
| 4/26/06 | Linfield College | Tour | 8 | US DOE |
| 5/1/06 | Reed | Tour | 1 | Reed |
| 5/2/06 | Reed | Startup | 1 | Reed |
| 5/2/06 | NRC | Examinations | 4 | Reed |
| 5/2/06 | Reed | Examinations | 3 | Reed |
| 5/2/06 | PFB | Training | 21 | Reed |
| 5/2/06 | Reed | Training | 2 | Reed |
| 5/3/06 | NRC | Examinations | 4 | Reed |
| 5/3/06 | Reed | Examinations | 4 | Reed |
| 5/3/06 | United Fire | Maintenance | 1 | Reed |
| 5/4/06 | Reed | Startup | 1 | Reed |
| 5/4/06 | Reed | Examinations | 5 | Reed |
| 5/4/06 | NRC | Examinations | 4 | Reed |
| 5/5/06 | Reed | Examinations | 1 | Reed |
| 5/5/06 | NRC | Examinations | 2 | Reed |
| 5/5/06 | Reed | Startup | 2 | Reed |
| 5/5/06 | Reed | Operations | 1 | Reed |
| 5/6/06 | Reed | Operations | 2 | Reed |
| 5/6/06 | Reed | Training | 1 | Reed |
| 5/7/06 | Reed | Operations | 2 | Reed |
| 5/9/06 | NRC | Examinations | 6 | Reed |
| 5/10/06 | NRC | Examinations | 3 | Reed |
| 5/10/06 | Reed | Examinations | 1 | Reed |
| 5/10/06 | Reed | Startup | 1 | Reed |
| 5/11/06 | Reed | Weekly | 1 | Reed |
| 5/11/06 | Reed | Maintenance | 3 | Reed |
| 5/12/06 | Reed | Maintenance | 1 | Reed |
| 5/16/06 | Lincoln High School | Tour | 21 | US DOE |
| 5/17/06 | Reed | Weekly | 1 | Reed |
| 5/19/06 | Reed | Tour | 3 | Reed |
| 5/23/06 | Reed | Tour | 6 | Reed |
| 5/26/06 | United Fire | Maintenance | 1 | Reed |
| 5/30/06 | Portland Community College | Tour | 12 | US DOE |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 5/31/06 | HVAC-RJ | Maintenance | 1 | Reed |
| 6/1/06 | Portland Community College | Tour | 12 | US DOE |
| 6/1/06 | Reed | Tour | 3 | Reed |
| 6/2/06 | Reed | Tour | 1 | Reed |
| 6/5/06 | United Fire | Maintenance | 1 | Reed |
| 6/5/06 | Reed | Tour | 2 | Reed |
| 6/5/06 | Reed | Weekly | 2 | Reed |
| 6/20/06 | RSO | Tour | 14 | US DOE |
| 6/20/06 | Reed | Maintenance | 1 | Reed |
| 6/20/06 | Reed | Weekly | 3 | Reed |
| 6/22/06 | RSO | Training | 12 | Reed |
| 6/26/06 | Reed | Training | 5 | Reed |
| 6/27/06 | Reed | Training | 7 | Reed |
| 6/28/06 | DeTemple | Maintenance | 2 | Reed |
| 6/28/06 | Reed | Maintenance | 4 | Reed |
| 6/28/06 | Reed | Startup | 3 | Reed |
| 6/28/06 | OCH | Tour | 18 | US DOE |
| 6/28/06 | Reed | Training | 2 | Reed |
| 7/7/06 | DeTemple | Maintenance | 2 | Reed |
| 7/7/06 | Reed | Maintenance | 2 | Reed |
| 7/8/06 | Reed | Weekly | 1 | Reed |
| 7/11/06 | Reed | Startup | 2 | Reed |
| 7/11/06 | United Fire | Maintenance | 1 | Reed |
| 7/11/06 | Reed | Maintenance | 3 | Reed |
| 7/12/06 | Reed | Weekly | 5 | Reed |
| 7/12/06 | Reed | Startup | 3 | Reed |
| 7/12/06 | Cascade Presbyterian | Tour | 19 | US DOE |
| 7/12/06 | LJCDS | Tour | 1 | US DOE |
| 7/13/06 | Reed | Startup | 2 | Reed |
| 7/13/06 | Saturday Academy | Tour | 23 | US DOE |
| 7/13/06 | Reed | Operations | 2 | Reed |
| 7/13/06 | Cascade Presbyterian | Tour | 8 | US DOE |
| 7/17/06 | Reed | Bimonthly | 2 | Reed |
| 7/18/06 | Reed | Bimonthly | 6 | Reed |
| 7/19/06 | Reed | Weekly | 2 | Reed |
| 7/19/06 | Reed | Maintenance | 2 | Reed |
| 7/20/06 | Reed | Startup | 2 | Reed |
| 7/20/06 | Reed | Maintenance | 1 | Reed |
| 7/20/06 | Reed | Shutdown | 1 | Reed |
| 7/24/06 | Reed | Tour | 1 | Reed |
| 7/24/06 | Reed | Maintenance | 2 | Reed |
| 7/26/06 | Reed | Startup | 3 | Reed |
| 7/26/06 | Reed | Maintenance | 3 | Reed |
| 7/27/06 | Reed | Startup | 4 | Reed |
| 7/27/06 | Reed | Operations | 2 | Reed |
| 7/27/06 | AWSEM | Tour | 21 | US DOE |
| 7/28/06 | Reed | Startup | 3 | Reed |
| 7/28/06 | Reed | Tour | 2 | Reed |
| 7/28/06 | United Fire | Maintenance | 1 | Reed |
| 31-Jul | Reed | Maintenance | 2 | Reed |
| 7/31/06 | Reed | Startup | 2 | Reed |
| 8/1/06 | Reed | Maintenance | 8 | Reed |
| 8/2/06 | Reed | Maintenance | 2 | Reed |
| 8/3/06 | Reed | Startup | 2 | Reed |
| 8/3/06 | Portland Community College | Tour | 19 | US DOE |
| 8/3/06 | Reed | Operations | 2 | Reed |
| 8/4/06 | Reed | Maintenance | 1 | Reed |
| 8/7/06 | Reed | Maintenance | 2 | Reed |

| Date | Institution | Purpose | Number | Funding |
|---|---|---|---|---|
| 8/7/06 | Reed | Startup | 1 | Reed |
| 8/7/06 | Reed | Tour | 11 | Reed |
| 8/7/06 | Reed | Shutdown | 1 | Reed |
| 8/8/06 | Reed | Startup | 3 | Reed |
| 8/8/06 | Reed | Maintenance | 2 | Reed |
| 8/8/06 | Reed | Tour | 4 | Reed |
| 8/8/06 | Reed | Shutdown | 1 | Reed |
| 8/9/06 | Reed | Weekly | 2 | Reed |
| 8/9/06 | Reed | Maintenance | 1 | Reed |
| 8/9/06 | Reed | Tour | 2 | Reed |
| 8/10/06 | Reed | Maintenance | 2 | Reed |
| 8/10/06 | DeTemple | Maintenance | 2 | Reed |
| 8/10/06 | Reed | Startup | 1 | Reed |
| 8/10/06 | Dynalectric | Maintenance | 3 | Reed |
| 8/10/06 | Reed | Maintenance | 2 | Reed |
| 8/11/06 | Reed | Tour | 2 | Reed |
| 8/14/06 | Reed | Maintenance | 3 | Reed |
| 8/15/06 | DeTemple | Maintenance | 1 | Reed |
| 8/15/06 | Dynalectric | Maintenance | 2 | Reed |
| 8/15/06 | Reed | Maintenance | 1 | Reed |
| 8/15/06 | United Fire | Maintenance | 1 | Reed |
| 8/16/06 | Reed | Weekly | 1 | Reed |
| 8/17/06 | DeTemple | Maintenance | 1 | Reed |
| 8/17/06 | Reed | Startup | 1 | Reed |
| 8/17/06 | Reed | Tour | 9 | Reed |
| 8/17/06 | Reed | Maintenance | 1 | Reed |
| 8/21/06 | Reed | Tour | 5 | Reed |
| 8/23/06 | Reed | Startup | 1 | Reed |
| 8/23/06 | Reed | Tour | 69 | Reed |
| 8/24/06 | Reed | Tour | 24 | Reed |
| 8/24/06 | Reed | Shutdown | 1 | Reed |
| 8/24/06 | Reed | Maintenance | 1 | Reed |
| 8/25/06 | Reed | Startup | 1 | Reed |
| 8/25/06 | Reed | Tour | 35 | Reed |
| 8/25/06 | Reed | Shutdown | 1 | Reed |
| 8/29/06 | DeTemple | Maintenance | 2 | Reed |
| 8/30/06 | DeTemple | Maintenance | 3 | Reed |
| 8/25/06 | Reed | Maintenance | 1 | Reed |