

Annual Progress Report

Fiscal Year 2005

**Research, Graduate Studies, and
International Programs**

Prepared by

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March 6, 2006

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I. Introduction

In this report we provide our annual assessment of the activities of the three offices under the supervision of the Associate Vice Chancellor for Research, Graduate Studies, and International Programs. In FY 2001, we developed a methodology to look at performance trends and historical performance data. In this current report for FY 2005, we provide updates to that more detailed information but do not carry the analysis to the detail of the FY 2001 report.

Contributors to this report include:

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II. Office of Research

Research Volume

The volume of research performed on the Montana Tech campus can be measured by two different but related metrics.

- The first measure is the total new grant funding received in a given fiscal year. This measures the grant writing success of the faculty during the current and preceding years. Figure 1 shows the trends for the last three years. Awards in FY 05 increased by 80% from the previous year.

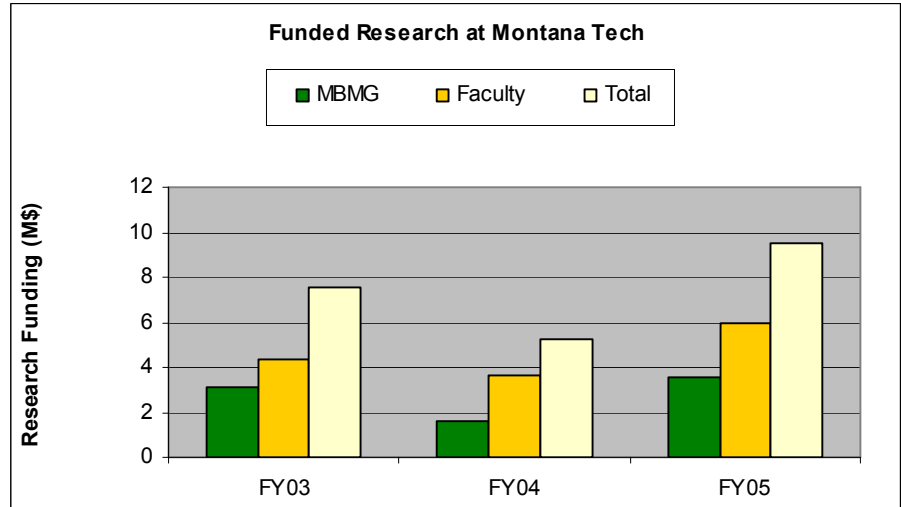


Figure 1: Total Awards Received FY2003 – FY2005

- The second measure of research productivity is more directly related to the research activity of a given year. This metric tracks the actual expenses incurred by the faculty, staff, and students for research related activities and charged to our external sponsors. As shown in Figure 2, G&C volume has been nearly constant over the last three years.

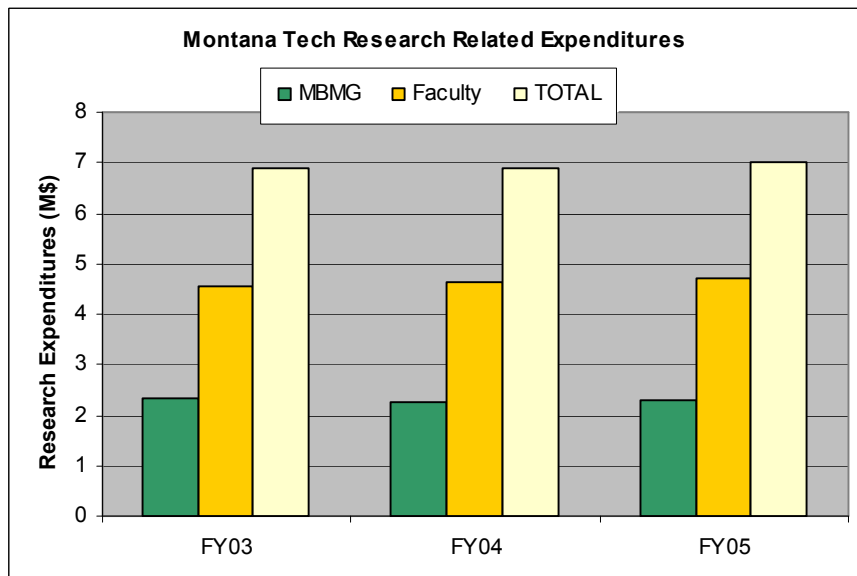


Figure 2: Funded Research FY2003 – 2005

Success Rate for Proposals Submitted

Another metric of grant writing is the success rate of our grant submissions. Table I compares the grant writing activity and success rates for the Fiscal Years 2003, 2004 and 2005. Submitted grants are shown for each year. Also shown are the data for funded, pending and denied proposals at the time of printing (March 6, 2006) for all Fiscal Years. Submitted values are used for the categories of Submitted, Pending and Denied. Primary Amount Awarded values are used for the Funded category. Appendix A is a summary of Proposals Submitted for FY 2005 sorted by Principal Investigator. Submitted value in FY04 was high due to a single large proposal that was unfunded. Data from FY 03 and FY 05 are more typical with approximately 50 % of the requested dollar amounts awarded.

Table I: Grant Writing Activity for Fiscal Years 2003 to 2005

Category	FY03		FY04		FY05	
	Number	Submitted Value (\$)	Number	Submitted Value (\$)	Number	Submitted Value (\$)
Submitted	129	\$11,694,400	127	\$30,629,215	123	\$16,082,616
Pending	14	\$ 2,544,085	28	\$ 5,166,605	30	\$ 4,420,841
Denied	18	\$ 3,928,844	10	\$14,643,279	6	\$ 3,712,519
Funded	97	\$ 5,221,471	89	\$10,819,331	87	\$ 7,949,257

Although the number of proposals submitted was constant, the average value of the submitted proposals increased dramatically from the previous years with the adjustment referenced above.

Campus Participation in Research

Another metric that we track is the number of Montana Tech employees involved in research. Data in Figure 3 shows the number of faculty and MBMG who have been involved in research for grants active in the fiscal year noted. Principal investigators and co-principal investigators are added for the total participant counts. This year, as in the last several years, we see increases in the number of Montana Tech faculty involved in research as newly hired tenure-track faculty, MBMG Staff, and Research Faculty increase their research activity.

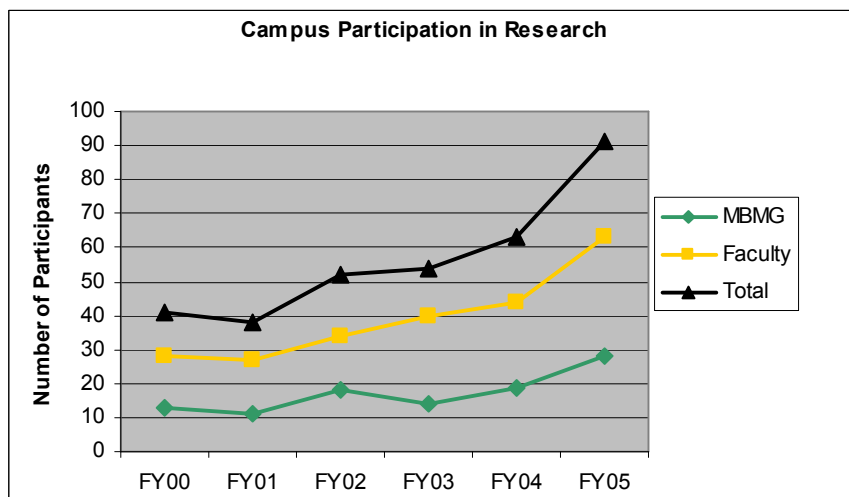


Figure 3: Campus involvement in research

Indirect Cost Returns

The Indirect Costs (IDC) assessed to each grant are used to support operational needs and provide investment funds for the campus research infrastructure. These funds typically amount to 15% of the total grants and contract activity for the year. These IDC funds are used to provide administrative support, institutional support, outreach support, and matching requirements. The remaining IDC funds are returned to Deans, Departments, and Principal Investigators (PIs). Figure 4 shows the historical value of these returns to Departments and PIs over the last four years. Note that net IDC collections exclude matching commitments. In FY2005, gross collections were \$1,006,599, match commitments and reinvestments related to the projects were \$111,702, leaving a net IDC collection of \$894,896. In FY 2005, 47% of the net collected IDCs were returned to the Colleges, Schools, Bureau, Departments and PI's with 39% going directly to PI's and Departments.

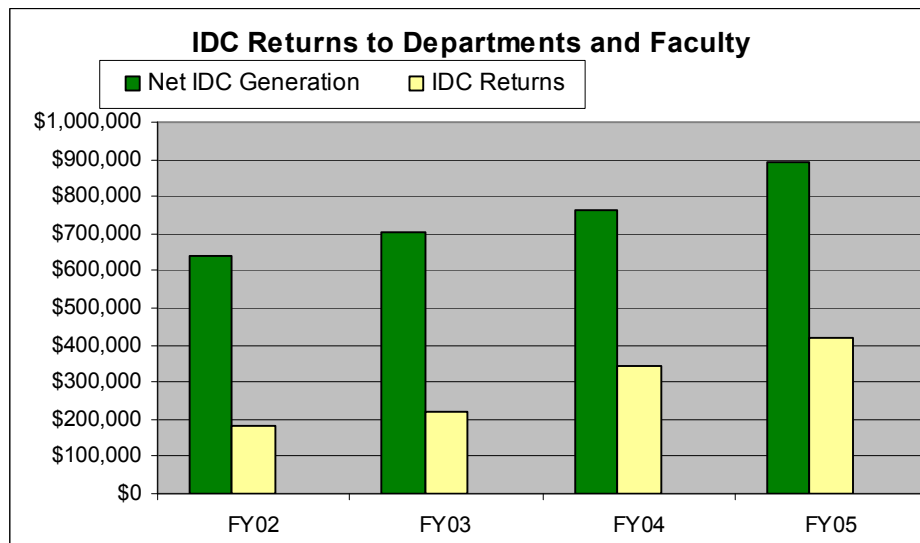


Figure 4: IDC Returns to Departments and Faculty

Scholarly Publications

The campus has no central collection point for the scholarly works produced by our faculty and staff. The Office of Research compiles a self reported list of faculty and staff publications associated with the research and scholarship of the campus and posts them on the Office of Research home page. Included in Appendix B is the list of publications for the 2005 calendar year as received from each faculty and staff member by March of 2006.

Industrial Collaborations

Collaboration with industrial partners is an important element of the support provided by the campus to existing and new business in Montana. These collaborations take various forms. These include developing marketable intellectual property, collaborative research and technology development ventures, and serving as a resource to regional businesses and industries. The information collected by the Office of Research provides specific information on the second form of interaction, funded collaborations. A list of these collaborations for FY 2004 is provided in Appendix C. Also included in Appendix D is a list of patent applications and patent awards.

Undergraduate Research Program

The Undergraduate Research Program (URP) is now in its tenth year of operation. Our major sponsor is the National Science Foundation (NSF) through the EPSCoR program. The NSF grant decreased in FY 2004 so efforts were made to control the growth of the program in AY 2003/04. A new NSF EPSCoR grant for FY2005 has been funded and efforts were made in the fall of 2004 to increase the participation in the program for AY 2004/2005. The graph reflects this success.

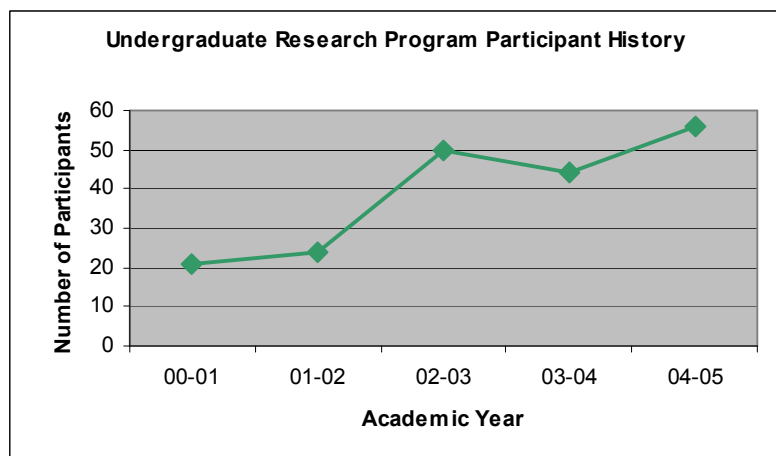
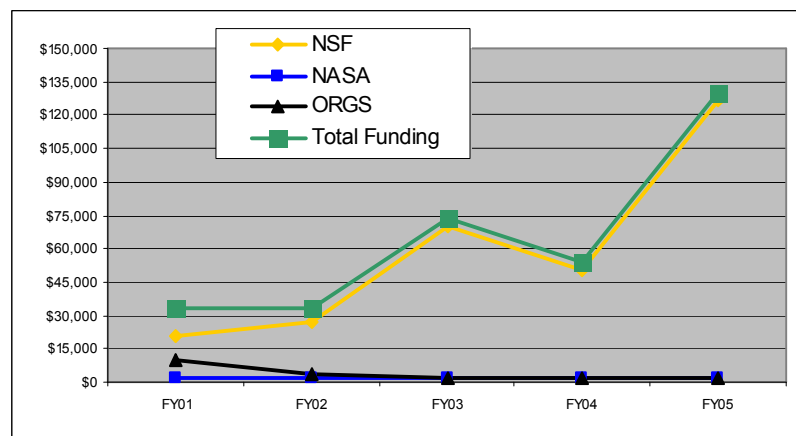


Figure 5: Undergraduate Research Program Participation

Figure 6: Undergraduate Research Program Funding



III. Office of Graduate Studies

In this section we examine trends in graduate enrollment and student financial support at Montana Tech.

Enrollment

In FY 2005 Graduate Student enrollment remained relatively constant. Given the robust engineering job market, the fact that we grew slightly is considered a positive result. Figure 8 shows the detail for some specific student groups. The fifth year's MS program shows no clear growth, while International student counts continue to recover in the post-9/11 environment. Another very interesting trend is the chaotic growth behavior in on-line students, driven by the Masters in Project Engineering and Industrial Hygiene.

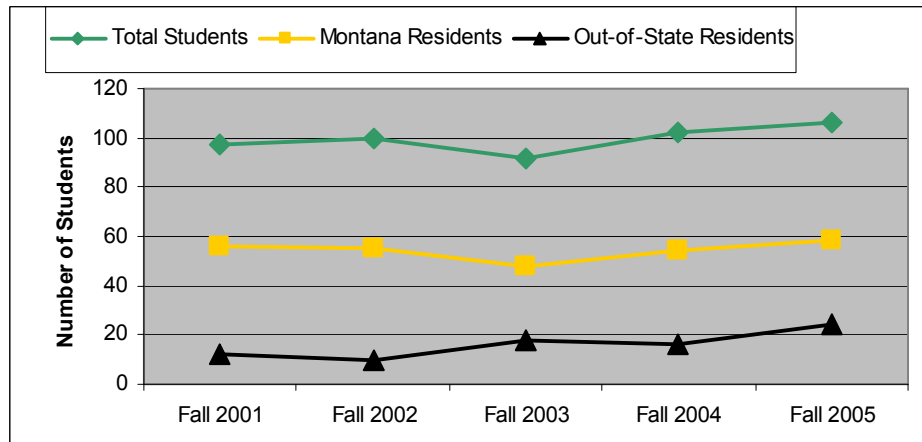


Figure 7: Graduate School Enrollment

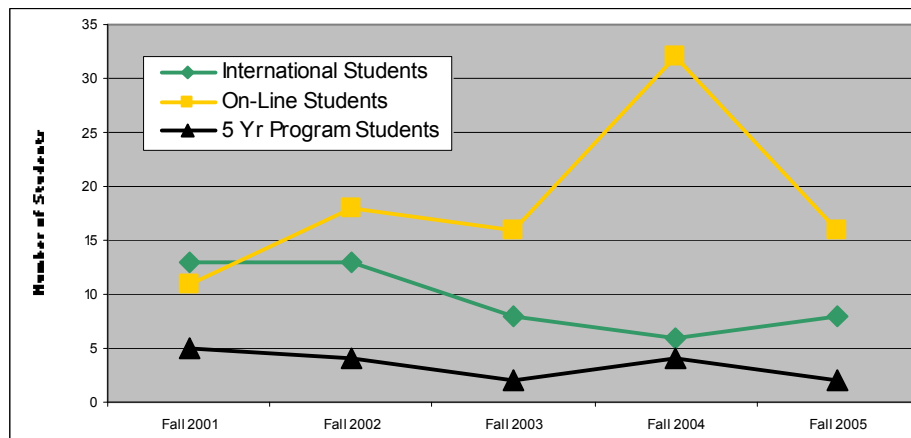


Figure 8: Graduate School Enrollment, Additional Data

Student Quality

We are continuing to monitor the quality of incoming students. This is a complex issue to fully define. One simple measure that we have been tracking is the GPA and GRE scores of our incoming first year graduate students. In Figure 9, the GRE scores of the incoming graduate student class are shown for the past six years.

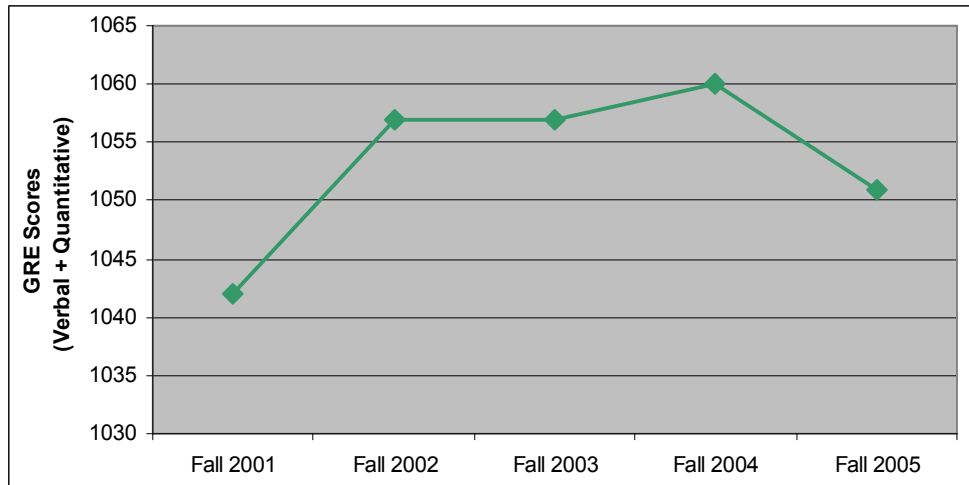


Figure 9: GRE Scores of Incoming Graduate Students (Verbal + Quantitative)

Figure 10 shows that same historical data range for the undergraduate GPA of the incoming graduate school class. These data are now showing a consistent increase in quality after the post 911 drop.

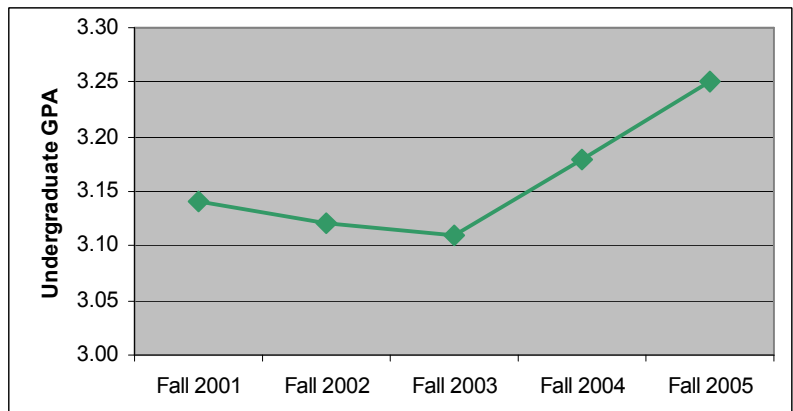


Figure 10: GPA of Incoming Graduate Students

Student Support

One final metric from the Graduate School of particular interest to students is the level of financial support they and their peers receive. In 2005 the graduate students received \$738,411 of total support, with the major portion coming from tuition waivers. Figure 11 shows a summary of all support funds available. Figure 12 shows a histogram of the financial support (from all sources, GTA, GRA, and fee waivers) received by our graduate students in 2005. 80% of our students received some form of financial support.

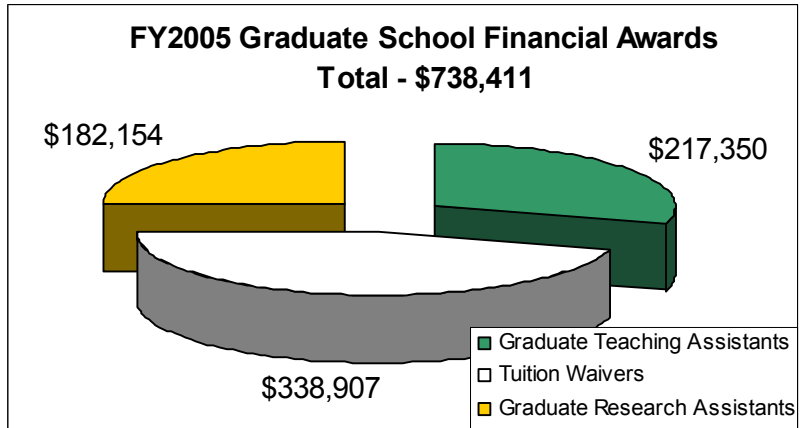


Figure 11: Total Graduate Student funding available

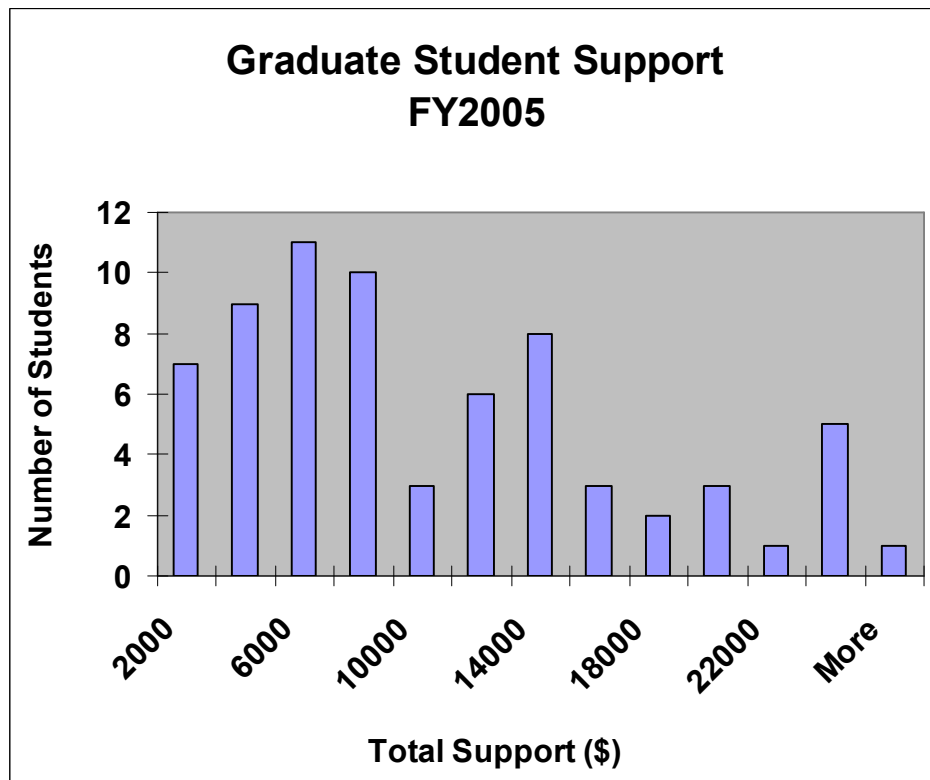


Figure 12: 2005 Graduate Student Support

IV. Office of International Programs

The Office of International Programs is currently working with five academic departments to strengthen our research exchange programs with partners around the world. This initiative is supported by the Bureau of Citizens and Cultural Exchanges of the U.S. Department of State. Participating academic departments include Metallurgical and Materials Engineering, Geophysical Engineering, Environmental Engineering, Geological Engineering, and Biological Sciences. The program will be continued by US Department of State funding in September of 2005 and the participating departments are beginning the effort to plan this program for the next two years.

International Visits

As part of the international exchange program Montana Tech sponsors visits by our faculty to foreign institutions and research sites, and hosts visiting international partners in Butte. Appendix E lists the details of these visits for FY 2005.

In addition to the faculty visits, the program operates a “Thesis Abroad” program for Montana Tech graduate students. To date, 13 students have participated in this opportunity. Appendix F documents the student visits that have occurred to date.

APPENDICES

Appendix A:	Summary of FY 2005 Proposals Submitted
Appendix B:	List of Publications for 2005
Appendix C:	Industrial Collaborations in FY 2005
Appendix D:	Patent Applications and Patent Awards
Appendix E:	International Collaborations in FY 2005
Appendix F:	Thesis Abroad Program

APPENDIX A
Summary of FY 2005 Proposals Submitted

PI Name	Department	Number of Proposals Submitted	Total Request Sponsor from Sponsors
Abdo, G	Montana Bureau of Mines and Geology	2	\$61,009.00
Anderson, Corby	Center for Advanced Mineral and Metallurgical Processing	4	\$1,294,077.00
Apple, M	Biology	1	\$224,051.00
Baker, Jane	College of Technology	4	\$404,111.53
Beatty, P.	Student Affairs	1	\$2,000.00
Conrad, P	Mining Engineering	1	\$543,573.00
Cronoble, R.	Mining Engineering	1	\$2,000,000.00
Deal, E	Montana Bureau of Mines and Geology	1	\$775.00
Donovan, R.	General Engineering	5	\$1,210,036.00
Douglass, R.	Biology	2	\$190,582.00
Duaine, T.	Montana Bureau of Mines and Geology	9	\$2,326,328.09
Figueira, J.	RESEARCH	3	\$172,000.00
Gammons, C.	Geological Engineering	1	\$227,723.00
Ganesan, K.	Environmental Engineering	4	\$1,355,324.00
Hilbert, L.	College of Technology	2	\$181,643.00
Hobbs, D	Chemistry	1	\$29,999.00
Jensen, R	Safety, Health and Industrial Hygiene	1	\$81,952.00
Kankelborg, A	OUTREACH	1	\$21,515.00
Kunz, K.	College of Technology	3	\$150,029.00
Link, C.	Geophysical Engineering	2	\$457,468.00
MacLaughlin, M	Geological Engineering	1	\$96,995.00
Madison, J.	Montana Bureau of Mines and Geology	4	\$176,963.00
McNamee, K	College of Technology	2	\$37,000.00
Mellott, K	Mine Waste Technology Program	3	\$148,839.00
Metesh, J.	Montana Bureau of Mines and Geology	4	\$218,102.00
Miller, K	Montana Bureau of Mines and Geology	2	\$124,631.00
Morrison, J	General Engineering	1	\$40,000.00
Naughton, P	MT Foundation	2	\$125,000.00
Olsen, J	Montana Bureau of Mines and Geology	1	\$117,000.00
Patton, P	Mining Engineering	4	\$595,004.00
Patton, S	Vice Chancellor for Academic Affairs	1	\$198,750.00
Patton, T.	Montana Bureau of Mines and Geology	4	\$101,180.00
Peterson, M	Mine Waste Technology Program	3	\$265,743.00
Porter, K.	Montana Bureau of Mines and Geology	2	\$191,034.00
Reiten, J	Montana Bureau of Mines and Geology	4	\$47,100.00
Spear, T.	Safety, Health and Industrial Hygiene	2	\$43,753.00
Speece, M	Geophysical Engineering	3	\$360,270.00
Stickney, M	Montana Bureau of Mines and Geology	2	\$54,940.00

Stierle, A.	Chemistry	1	\$195,000.00
Trudnowski, D	General Engineering	1	\$27,000.00
Twidwell, L	Metallurgical Engineering	1	\$160,110.00
Van Voast, W.	Montana Bureau of Mines and Geology	1	\$10,000.00
Verlanic, Amy	OUTREACH	6	\$781,170.75
Wheaton, J.	Montana Bureau of Mines and Geology	7	\$652,387.00
Wilde, E	Montana Bureau of Mines and Geology	1	\$75,000.00
Wolfgram, D.	Geological Engineering	1	\$11,500.00
Young, Courtney	Metallurgical Engineering	6	\$283,949.00
		120	\$16,072,616.37

APPENDIX B

List of Publications for 2005

<p>Amtmann, J., Kukay, J., Gallagher, J., Spath, B. In Press. Case Study of a Childrens Judo Class: Musculoskeletal Fitness Changes (<i>Intermountain Journal of Sciences</i>). (Notified of acceptance by email: Friday, December 23, 2005.)</p>
<p>Amtmann, J., Cotton, A. 2005. Strength and Conditioning for Judo. <i>Strength and Conditioning Journal</i>. Vol. 27 (April), No. 2, pp. 26-31.</p>
<p>Anderson, C.G. and Fayram, T.S., "The Use of Design of Experimentation Software in Applied Flotation Testing" , Centenary of Flotation Symposium, AuSIMM-SME, Brisbane, Australia, June 2005.</p>
<p>Anderson, C.G.—Luganov, V.A., and Anderson, C.G., Sulfidization of Arsenopyrite, TMS Annual Meeting, San Francisco, California, February 2005.</p>
<p>Anderson, C.G., Huang, H. H., Miranda, P.J., Chandra, I. Dahlgren, E., Jeffrey, M. Stacey, D., "Fundamentals and Applications of Alkaline Sulfide Leaching and Recovery of Gold, CIM Gold Symposium, Calgary, Alberta, 2005.</p>
<p>Anderson, C.G., "The Treatment of Arsenic Bearing Ores, Concentrates and Materials with Alkaline Sulfide Hydrometallurgy", TMS Arsenic Symposium, San Francisco, 2005.</p>
<p>Anderson, C.G., Chandra, I. Dahlgren, E., Jeffrey, M. Stacey, D. "Fundamentals of Alkaline Sulfide Leaching and Recovery of Gold", SME Annual Meeting, Salt Lake City, 2005.</p>
<p>Anderson, C.G., Chandra, I. Dahlgren, E., Jeffrey, M. Stacey, D. "Fundamentals of Alkaline Sulfide Leaching and Recovery of Gold", ALTA Nickel Cobalt and Copper, Perth, Western Australia, 2005.</p>
<p>Anderson, C.G., "NSC Pressure Leaching Applications", Peruvian Mining Engineers Annual Conference, Arequipa, Peru, September, 2005.</p>
<p>Anderson, C.G.—H.H. Huang, L.G. Twidwell, C.G. Anderson and C.T. Young, "Chemical Titration Simulation - An Equilibrium Calculation Approach", The International Conference on Computational Analysis in Hydrometallurgy, 35th Annual Hydrometallurgy Meeting of CIM, Calgary, Alberta, Canada, August, 2005.</p>
<p>Anderson, C.G., Chandra, I. Dahlgren, E., Jeffrey, M. Stacey, D. "Fundamentals and Applications of Alkaline Sulfide Leaching and Recovery of Gold, IPMI Annual Meeting, Florida 2005.</p>
<p>Anderson, C.G. "Cyanide Use in Gold Processing: Fear, Misperception, Truth and Alternatives", 7th World Congress of Chemical Engineering Right Here Right Now Poster Session, Glasgow, Scotland, July, 2005.</p>
<p>Anderson, C. G. and Stacey, D.L. , Fundamentals and Applications of Alkaline Sulfide Leaching and Recovery of Gold", Montana Academy of Sciences Meeting, Butte Montana April, 2005.</p>
<p>Anderson, C.G., Olmstead, W., Twidwell, L.G., Young, C.A., "Fundamentals and Applications of Fire Assay", CAMP Short Course, Butte, Montana, August 2005.</p>
<p>Anderson, C.G.—Yu. I. Sukharnikov, S. V. Yefremova, Corby G. Anderson, A. A. Zharmenov, L. V. Bounchouk, A. M. Savchenko. THE METHOD OF PROCESSING THE RICE HULLS AND THEIR DERIVATIVES IPC C 10 B 53/02; C 01 B 31/02; C 01 B 33/12, 2005.</p>
<p>Anderson, C.G., Miranda, P.J. and Twidwell, L.G., The TEMPER and Free Form Fabrication Titanium Initiatives at The Center for Advanced Mineral and Metallurgical Processing, USA XITC 2005, China.</p>
<p>Anderson, C.G., Miranda, P.J. and Twidwell, L.G., The TEMPER and Free Form Fabrication Titanium Initiatives at The Center for Advanced Mineral and Metallurgical Processing, USA ITA Annual Meeting, Scottsdale, Arizona 2005.</p>
<p>Anderson, C.G., Miranda, P.J. and Twidwell, L.G., The TEMPER and Free Form Fabrication Titanium Initiatives at The Center for Advanced Mineral and Metallurgical Processing, USA SME Heavy</p>

Minerals, Jacksonville, Florida, 2005.
Anderson, C. G. and Stacey, D.L. , Fundamentals and Applications of Alkaline Sulfide Leaching and Recovery of Gold”, CAST Annual Meeting, Blacksburg Virginia, 2005.
Apple, M. , C. Thee, V. Smith-Longozo, C. Cogar, C. Wells and R. Nowak. 2005. Arbuscular Mycorrhizal Colonization of <i>Larrea tridentata</i> and <i>Ambrosia dumosa</i> Roots Varies with Precipitation and Season in the Mojave Desert. <i>Symbiosis</i> 39: 131-136.
Apple, M. —Olszyk, D., M. Apple , B. Gartner, R. Spicer, C. Wise, E. Buckner, A. Benson-Scott and D. Tingey. 2005. Xeromorphy increases in shoots of <i>Pseudotsuga menziesii</i> (Mirb.) Franco seedlings with exposure to elevated temperature but not elevated CO ₂ . <i>Trees</i> 19:552-563.
Berg, R.B. , 2005, “Geologic Map of the Upper Clark Fork Valley between Garrison and Bearmouth, Southwestern Montana,” Montana Bureau of Mines and Geology Open-File Report MBMG 523, 18-p. text and map at a scale of 1:50,000.
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Douglass, Richard J. , Charles H. Calisher, and Konrad C. Bradley, 2005. “State-by-State Incidences of Hantavirus Pulmonary Syndrome in the United States, 1993-2004.” <i>Victor-Borne Zoonotic Dis.</i> 5, 189-192.
R. J. Douglass —Kuenzi, A. J., R. J. Douglass , C. W. Bond, C. H. Calisher, and J. N. Mills. 2005. Long-term dynamics of Sin Nombre viral RNA and antibody in deer mice in Montana. <i>Journal of Wildlife Diseases</i> 41:473-481.
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Duaine T. E. —Dolena, T. M., Speece, M. A., Link, C. A., Miller, P. F., and Duaine, T. E. , 2005, A land streamer aided, three-dimensional (3-D) seismic reflection survey, Belt, Montana: <i>Proc. Symposium on the Applications of Geophysics to Engineering and Environmental Problems</i> , 971-978.
Duaine T. E. —Dolena, T. M., Speece, M. A., Link, C. A., and Duaine, T. E. , 2005, A land streamer aided, three-dimensional (3-D) seismic reflection system: <i>Journal of Engineering and Environmental Geophysics</i> , in review.
Gammons, C. H. —Pellicori D. A., Gammons C. H. , and Poulson S. R. (2005) Geochemistry and stable isotope composition of the Berkeley pit lake and surrounding mine waters, Butte, Montana. <i>Applied Geochemistry</i> 20, 2116-2137.
Gammons, C. H. —Parker S. R., Poulson S. R., Gammons C. H. , and DeGrandpre M. (2005) Biogeochemical controls on diel cycles in the stable isotopic composition of dissolved O ₂ and DIC in the Big Hole River, Montana, USA. <i>Environmental Science and Technology</i> 39 (18): 7134-7140.
Gammons C. H. , Wood S. A., Pedrozo F., Varekamp J., Nelson B., Shope C. L., and Baffico, G. (2005) Hydrogeochemistry and rare earth element behavior in a volcanically acidified watershed in Patagonia, Argentina. <i>Chemical Geology</i> 222, 249-267.
Gammons C. H. , Wood S. A. and Nimick D. A. (2005) Diel behavior of rare earth elements in a mountain stream with acidic to neutral pH. <i>Geochim. Cosmochim. Acta</i> 69, 3747-3758.

<p>Gammons C. H., Nimick D. A., Parker S. R., Cleasby T. E. and McCleskey, R. B. (2005) Diel behavior of Fe and other heavy metals in a mountain stream with acidic to neutral pH: Fisher Creek, Montana, USA. <i>Geochim. Cosmochim. Acta</i> 69, 2505-2516.</p>
<p>Gammons, C. H.—Cetiner Z. S., Wood S. A. and Gammons C. H. (2005) The aqueous geochemistry of the rare earth elements: Part XIV. The solubility of rare earth element phosphates from 23 to 150°C. <i>Chemical Geology</i> 217, 147-169.</p>
<p>Gammons C. H., Shope C. L., and Duaine T. E. (2005) A 24-hour investigation of the hydro-geochemistry of storm water and baseflow in an urban area impacted by mining: Butte, Montana. <i>Hydrological Processes</i> 19, 2737-2753.</p>
<p>Gammons C. H. and Pellicori D. (2005) Subaqueous oxidation of pyrite and stable isotope geochemistry of an acidic pit lake. Final Report of Investigations. Prepared for EPA, MSE, and Montana Tech Mine Waste Technology Program, Activity IV, Project 27, 109 p.</p>
<p>Gammons C. H. and Poulson S. R. (2005) Stable isotopes of precipitation, evaporated mine water, and rivers in Montana. Proc. 2005 Montana Rivercenter Conference, Missoula, MT, Sept. 23, 2005.</p>
<p>Gammons, C. H.—Sudbrink A. J., Madison J., Weight W. D. and Gammons C. H. (2005) Field investigation of contaminated groundwater near the Comet Mine Reclamation site, Basin, MT. Proc. 22nd Annual Montana Water Conference, Amer. Water Resources Assoc., Bozeman, MT, Oct. 2005.</p>
<p>Gammons, C. H.—Grant T. and Gammons C. H. (2005) Hydrogeochemistry of arsenic in lower Silver Bow Creek below Warm Springs Ponds, Montana. Proc. 22nd Annual Montana Water Conference, Amer. Water Resources Assoc., Bozeman, MT, Oct. 2005.</p>
<p>Gammons C. H., Poulson S. R. and Reed P. (2005) Why you should use stable isotopes in your hydrological studies: Examples from Butte, Montana. Proc. 22nd Annual Montana Water Conference, Amer. Water Resources Assoc., Bozeman, MT, Oct. 2005.</p>
<p>Gammons, C. H.—Roesler A. and Gammons C. H. (2005) Geochemistry and isotopic composition of H₂S-rich water in flooded underground mine workings, Butte, Montana. Proc. 86th Annual Meeting of the AAAS Pacific Division, 24 (1), p. 81, June 12, 2005.</p>
<p>Gammons C. H. (2005) Making the link between mine geology and mine water geochemistry in Butte, Montana. Proc. Northwest Miners Convention, Spokane, WA, December, 2005.</p>
<p>Gammons, C. H.—Parker S. R., Poulson S. R., and Gammons C. H. (2005) Diel cycles in stable isotopic composition of dissolved O₂ and CO₂ in a river due to biogeochemical processes. Proc. 2005 meeting of the Montana Academy of Sciences, Butte, MT, April 9-10, 2005.</p>
<p>Gammons, C. H.—Wood S. A., Gammons C. H., and Parker S. R. (2005) The behavior of REE in naturally and anthropogenically acidified waters. Proc. 24th Int. Conf. on Rare Earth Element Research.</p>
<p>Gammons C. H., Shope C. L. and Xie Y. (2005) Causes of diel cycling of Zn in streams with near-neutral pH draining abandoned mine lands. <i>Geochim. Cosmochim. Acta</i> 69 (10), Supplement 1, A770.</p>
<p>Gammons, C. H.—Parker S. R., Poulson S. R., and Gammons C. H. (2005) Diel cycles in stable isotopes of dissolved O₂ and dissolved inorganic carbon in the Big Hole River, Montana. <i>Geochim. Cosmochim. Acta</i> 69 (10), Supplement 1, A758.</p>
<p>Hoffman, B. T. and Kovscek, A. R., "Displacement Front Stability of Steam Injection into High Porosity Diatomite Rock," <i>Journal of Petroleum Science and Engineering</i>, v. 46, Iss. 3-4, pp. 253-266, March 17, 2005.</p>
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APPENDIX C
Industrial Collaborations
July 2004 through June 2005

PI Name	Dept	Title of Project	Primary Funding Source	2nd Funding Source	Total Project Awarded
Anderson, C	CAMP	Task II - Technical Assistance for the Titanium Extraction Mining and Process Engineering Research (TEMPER) Program	UTRS		\$495,920.00 -200,436.06 <u>\$295,483.94</u> Balance
Anderson, C	CAMP	Alkaline Sulfide Gold Hydrometallurgy Research	CAST	Profile Resources	\$68,098.00
Anderson, C	CAMP	Non-toxic, Alkaline Sulfide Lixivants for Recovering Gold from MT Orebodies	MBRCT (Montana Board of Research & Commercialization Technology)		\$62,675.00
Anderson, C	CAMP	Hoidas Lake-Metallurgical Work, Phosphate Flotation, Testing & Analysis Work	Great Western Minerals		\$36,700.00
Anderson, C	CAMP	Nickel Laterite Metallurgy	Western Mine Engineering		\$36,366.50
Anderson, C	CAMP	Copper Gold Ore Process Development	Elkhorn Goldfields, Inc.		\$36,849.10
Anderson, C	CAMP	Ore Characterization & Process Development of Copper Concentrate	Sociedad Minera El Brocal, Peru		\$13,940.00
Anderson, C	CAMP	Cal Energy Zinc Plant Analysis	Diligence Inc.		\$9,844.57

APPENDIX C (Continued)
Industrial Collaborations
July 2004 through June 2005

PI Name	Dept	Title of Project	Primary Funding Source	2nd Funding Source	Total Project Awarded
Anderson, C	CAMP	Metallurgical Consulting Work	EPA		\$7,575.45
Anderson, C	CAMP	Technical Support	Formation Capital		\$7,417.40
Anderson, C	CAMP	Phase I Report	Teck Cominco Metals		\$7,423.05
Anderson, C	CAMP	Antimony Gold Processing & Alkaline Sulfide Antimony Process Report	Straits Resources		\$5,275.00
Anderson, C	CAMP	Refractory Gold Ore Technical Assistance	American Gold Capital Corp.		\$3,556.47
Anderson, C	CAMP	X-Ray Diffraction Work & XRD Analysis Work	Heritage Env. Svcs.		\$3,500.00
Anderson, C	CAMP	Assay Work for Ore Samples	BLM-Las Vegas Division		\$2,999.00
Anderson, C	CAMP	Arsenic Abatement Study	Tech Cominco Metals, Ltd.		\$2,933.05
Anderson, C	CAMP	Recycled Automobile Catalyst Analysis and Recovery, Assay and Hydrometallurgical Work, Palladium Analysis	Sepramet, Ltd.		\$2,910.00

APPENDIX C (Continued)
Industrial Collaborations
July 2004 through June 2005

PI Name	Dept	Title of Project	Primary Funding Source	2nd Funding Source	Total Project Awarded
Anderson, C	CAMP	Workshop Expenses for Consulting Work	World Resources Institute		\$2,265.71
Anderson, C	CAMP	Montana – Slag Characterization, Palladium Literature Search	Stillwater Mining Company		\$1,871.40
Morrison, J	General Engineering	Intelligent Self-Evolving Prognostics (Collaboration w/ Qualtech Systems, Inc.)	NASA STTR		\$40,000.00
Patton, P	Mining	Judith Basin Coal Project - MOU - Pace Financial Network - Necessary Core Data Attributes	Pace Financial Network		\$13,152.00
Peterson, M	MWTP	Creation of Multimedia Program for Technology Transfer - Mod #2	EPA/DOE/MSE		\$10,000.00
Peterson, M	MWTP	Mine Waste Technology Program's Training & Education Activities (FY05 Funding)	EPA/DOE/MSE		\$201,648.00
Peterson, M	MWTP	Creation of Multimedia Programs for Technology Transfer - Mod #4	EPA/DOE/MSE		\$54,095.00
Spear, T	SHIH	Sampling Strategy for Silicon Exposure	ASiMI		\$7,000.00
TOTAL					<u>\$933,578.70</u>

APPENDIX D PATENT APPLICATIONS AND PATENT AWARDS

Description / Patent No.	File Date	Patent Name	Inventor's Name	Action	Responsible for Action	Deadline/ Follow up Date
Possible Disclosure Ideas						
TBD	5/1/2005	Effect of Pressure on Flotation Efficiency	Dr. Courtney Young	File provisional patent	VC Research	5/1/2005
Disclosures in Process						
TBD	2/18/2005	Meth Lab Detection System	Dr. John Morrison, Mr. Burce Madigan, and Dr. Richard Johnson	White Paper	VC Research & R DeDominic	5/15/2005
Provisional Patents						
Provisional Patent UMT - 111P Serial No. 60/637,969	12/20/2004	Battery Impedance Identification via Simultaneous Synchronous Detection	Dr. John Morrison	Patent Application	VC Research	12/20/2005
Patents Applied for by Montana Tech						
UMT - 108XCI Serial No. 10/993,719	11/19/2004	Apparatus & Method for Removing Mercury Vapor from a Gas Station	Dr. Kumar Ganesan	Market research -- identify corporate partners	Dr. K. Ganesan & VC Research	

Patents Applied for by Outside Company Inventor						
Patent No. 10/840,442 Company: PFM	5/6/2004	Rapidly Deployable Three Dimensional Seismic Recording System	Dr. Curtis Link & Dr. Marvin Speece	Follow up on patent application and marketing efforts	Dr. C Link & Dr. M. Speece	5/1/2005
Trade Secrets						
Patents Issued						
		Taxol	Dr. Don Stierle & Dr. Andrea Stierle	None	None	None
Trade Secrets / Licensing Agreement						
	7/1/1998	Montana Tech Ferrous Arsenate Precipitation Technology	Dr. Larry Twidwell / MSE			

APPENDIX E
International Collaborations
July 2004 through June 2005

International Campus Visitors To Montana Tech

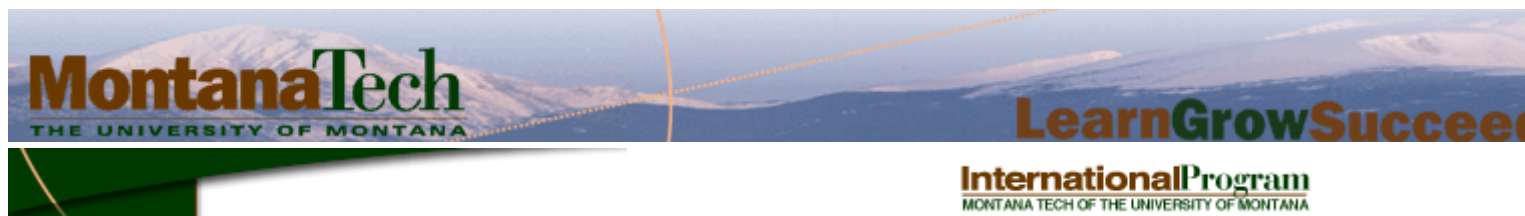
Name	Arrival	Institution	Citizenship	Departure	Agenda / Purpose	Host
The Honorable, Donal Denham, Irish Consulate General, San Francisco; Sean O Coileain, Ph.D., Head of the Department of Modern Irish, UCC; Dermot Keogh, Ph.D., Head of the Department of History, UCC; Colbert Kearney, Ph.D., Head of the Department of English, UCC; Louis Tobin, International Education Officer, UCC; Breandan Feiritear, Independent Filmmaker	4/27/2005	University College Cork, Cork, Ireland	Ireland	4/27/2005	Exchange	Joseph Figueira

Montana Tech Faculty International Travel / Exchange

Date of Arrival	Institution	Country	Date of Departure	Agenda / Purpose
8/1/04	University of Auckland	Australia	8/13/04	To establish a formal university-level academic link between Montana Tech and the University of Auckland for academic exchanges and cooperation.
8/8/04	Griffith University, Brisbane	Australia	8/15/04	Visit with Montana Tech Exchange Student, Josh Junkert and Dr. Gregory Hope, Head of Science and Professor of Physical Chemistry.

8/10/04	University of New South Wales	Australia	8/20/04	Visit UNSW campus to set up academic Exchange Programs.
9/12/04	University of Santiago	Chile	9/18/04	Presented papers at Mining/Metallurgy conferences and initiate discussions.
10-05-04	Jilin University, Changchun	China	10/14/04	Meet with members of the International Relations Program and the Dept. of English at Jilin University. Presented two lectures: "Description of Academic Programs in Technical Communication at Montana Tech" and "How American Students Research, Organize and Write Academic Research Papers"
10/22/004	University of New south Wales, University of Technology, Monash University, James Cook University and Griffith University	Australia	11/07/04	Discuss international exchange possibilities.
11/10/04	University of Capetown	South Africa	11/18/04	Present papers at Mining/Metallurgy conferences and initiate discussions.
11/19/04	CEARART Center, Caviahue	Argentina	11/24/04	Attended Conference: The 6th Crater and Volcanic Lakes Workshop; Presented Paper: Diel Concentration Cycles of Major and Trace Elements in the Rio Agrio, Argentina
5/22/2005	Titanium International Meeting, Kieve, Ukraine	Ukraine	5/27/2005	Attend Titanium International Meeting
6/5/2005	Centenary of Flotation Meeting	Australia	6/10/2005	Represent Courtney Young at the Centenary of Flotation Meeting, Brisbane, Australia

APPENDIX F THESIS ABROAD PROGRAM



[International Program](#) > Ongoing Research

The table below lists the most recent graduate students involved in the Montana Tech International Program. Details of the students and their projects can be found by simply clicking on their names.

Montana Tech Foreign Exchange Students Traveling Abroad

Student Name	Major Department	Foreign Institution	Country
Matthew Casey	Geophysical Engineering	Curtin University of Technology	Perth, Australia
Michael Wallace	Geophysical Engineering	Curtin University of Technology	Perth, Australia
Aaron Wandler	Geophysical Engineering	Curtin University of Technology	Perth, Australia
Steve Dent	Environmental Engineering	University of New South Wales	Sidney, Australia
Brooke Brady	Environmental Engineering	University of New South Wales	Sidney, Australia
Melody Madden	Environmental Engineering	University of New South Wales	Sidney, Australia
Dave Douglas	Metallurgical and Materials Engineering	James Cook University	Townsville, Australia
Darby Stacey	Metallurgical and Materials Engineering	Monash University	Melbourne, Australia
Josh Junkert	Metallurgical and Materials Engineering	Griffith University	Brisbane, Australia
Steve Parker	Geology	Universidad Nacional Del Comahue	Neuquen, Argentina
Tim McInerney	Metallurgical and Materials Engineering	Federal Institute for Materials Research and Testing	Berlin, Germany

Funding for these programs has been partially supported by grants from the Bureau of Educational & Cultural Affairs of the United States Department of State, under the authority of the Fulbright-Hays Act of 1961, as amended, under current Agreement S-ECAPE-05-GR-107 (JY) and under previous Agreement PEPS-0262.



[International Program](#) > [Ongoing Research](#) > Seismic Data Processing

Matthew Casey is working on his master's in Geophysical Engineering at Montana Tech and incorporated Tech's International Program into his studies. He spent four months conducting research for his master's thesis at Curtin University of Technology in Perth, Australia. Perth is the capital city of the State of Western Australia.

While at Curtin University, Matthew's mentor was Dr. Donald Sherlock, who works for a governmental research organization, Commonwealth Scientific Industrial Research Organization (CSIRO). The research organization is located at Curtin University and shares the same facility as the Department of Exploration Geophysics at Curtin University. The two entities have formed the Australian Resource Research Consortium (ARRC) which consists of the Petroleum Engineering and Exploration Geophysics departments as well as CSIRO.



While at Curtin, Matthew processed seismic data and the tentative title of his thesis is, "The Use of Neural Networks to aid in the Attribute Analysis of Time-lapse 3D Analog Reservoir Modeling Data".

In evaluating the host, Curtin University of Technology, Matthew stated, "CSIRO and ARRC are great places to work. You have to be very self motivated and be able to take research into your own hands. The facilities are top notch and very high tech. CSIRO and ARRC are doing some very cutting edge research in their fields and are very well regarded in the international community of their field. This was the best thing I have ever done with my education."

While in Australia, Matthew went on weekend excursions north and to the east of Perth to see national parks, he went to Dr Sherlock's farm in the outback, took a boat wine tour of the Swan River Valley, and experienced the nightlife and club scenes of Perth.



[International Program](#) > [Ongoing Research](#) > Investigation of Rapid AMT

Michael Wallace spent close to four months working on his master's project at Curtin University of Technology located in Perth on the west coast of Australia.

Michael is a graduate student working on his master's degree in Geosciences with a concentration in Geophysical Engineering. In his master's program, he is investigating the use of rapid audio magnetotellurics for shallow sub-surface exploration. While at Curtin University of Technology, he studied under the direction of Dr. Anton Kepic and investigated the use of a long wire antenna (LWA) and an USB audio device for audio magnetotelluric surveying (AMT). AMT is a geophysical surveying method that uses natural electric and magnetic fields at low frequencies (1 Hz – 22 kHz) to create a conductivity structure for the shallow subsurface (above 300 m). The LWA allows for a wire to be quickly pulled along the ground while the audio device digitizes the signal at 24 bits rapidly. These two improvements allow for better resolution and increased survey speed along a surveyed line than conventional methods like time domain electromagnetics.



Michael said the International Exchange program allowed him to “branch out” and find a suitable project for his master's program. He said he especially appreciated the contacts he made while living in the Guild House, an international house at Curtin University. “The Guild House was a big community of Australian and international students, and I met a lot of people from all over the world. I believe about twenty to twenty five countries were represented, but the most memorable men and women I met were from Australia, Singapore, Malaysia, Hong Kong, Mauritius, Indonesia, Kenya, Dubai, and India. It was fun to share our cultures in such a diverse community. I played volleyball and soccer for the Guild House team and attended many

birthday parties, and ate a lot of curry. Guild House was possibly the best dormitory experience I have had in five years of attending colleges and universities.”



[International Program](#) > [Ongoing Research](#) > **Amplitude of a Reflected Ultrasonic Wave**

Aaron Wandler worked on his master's project at Curtin University of Technology in Perth, Australia; his stay was for four months. Curtin University of Technology is Western Australia's largest university and has over 31,000 students and nearly 1,000 of those students are research students. Curtin University of Technology is internationally focused and is considered world-class.

While at Curtin University, Aaron was under the direction of Brian Evans, professor in Exploration Geophysics. Aaron stated, "For my project, I wanted to see how dissolved CO₂ in water and other liquids affects the amplitude of a reflected ultrasonic wave. This information will be helpful for managing oil reservoirs that are using CO₂ for enhanced oil recovery." This is currently a very active area of research and the laboratory is a one-of-a-kind facility for investigating this phenomenon. Aaron reported, "The school's facilities were top-notch. I felt that the project I worked on was a perfect fit for my interests."



Aaron praised Montana Tech's international program by stating, "I think the International Program at Montana Tech is very good; the school I visited is a very strong school in Exploration Geophysics, which is my field." While at the host institution, Aaron became part of a group of friends who were also international students from China, Norway, Sweden, Iceland, Africa, and the United States. He took a six-week golf lesson through the school, and participated in various school activities like the Oktoberfest celebration and John Curtin Weekend where students go to small rural towns and do community service.



[International Program](#) > [Ongoing Research](#) > **Mercury Flux**

Stephen Dent, a graduate student working on his master's degree in Environmental Engineering, describes Montana Tech's International Program as "...invaluable and an excellent opportunity for anyone interested in participating."

Stephen spent three months studying under Dr. Stephen Moore at the University of New South Wales in Sydney, Australia. Sydney is the capital of New South Wales. The city is the second largest in Australia and is home to the famous Sydney Opera House and Bondi Beach. Dr. Moore and his students are working on modeling cadmium flux through the anthroposphere in Sydney. Steven worked with them in applying their model to mercury flux in the forest environment of Montana. Steven's thesis title is tentatively called "Mercury Flux in Pristine Forest Areas of Montana." Steven stated, "I think that the University of New South Wales is an excellent institution. Their library is the best I've ever seen and their staff is all very experienced and knowledgeable. Their program is highly productive, as they work very closely with the City of Sydney in their research."

While in Sydney, Stephen took full advantage of that area by going to the beaches, the Sydney Opera House and even took a commuter train to tour the Blue Mountains. After his three months of studying at the University of New South Wales, Stephen took an additional three weeks in which he flew to Darwin, took bush safaris and joined an outback tour that ended in Cairns where he went scuba diving on the Great Barrier Reef.



[International Program](#) > [Ongoing Research](#) > **Stentless Aortic Valve Testing**

Brooke Brady took part in Montana Tech's International Program by traveling to Sydney, Australia and conducted research on her thesis topic at the University of New South Wales.

Her thesis title is "Evaluation and Testing of a Stentless Aortic Valve." Brooke stated, "The intention of my research visit was to establish a relationship with University of New South Wales's Graduate School of Biomedical Engineering. I conducted further research and testing on my thesis topic and I became familiar with their laboratories and equipment. I also had the opportunity to participate in ongoing projects and lectures relevant to my topic." She further stated, "The University of New South Wales has an excellent program in Biomedical Engineering...it's interesting to see what is going on in other parts of the world since a lot of the topics taught at Tech are global concerns as well."

While Brooke was in the Sydney area, she enjoyed the outdoor recreation available. She reported, "Sydney is surrounded by national parks and forests which have great hiking tracks and fabulous views of the area and the coast. I attended a couple of concerts at the Sydney Opera House, went to the Hunter Valley wine country, visited their many beaches, tried surfing, and experienced Sydney's cultural specialty coffee and Irish pub atmosphere."

After returning to Montana Tech and completing her master's program, Brooke is moving back to the Sydney area to explore her professional career abroad. She stated, "I definitely would not be exploring this path in life and my career had I not had support from Montana Tech to experience it in the first place."

[International Program](#) > [Ongoing Research](#) > Domestic Pets as Bio-Samplers

While working on her Master of Science thesis in environmental engineering, Melody Madden spent three months abroad. As a Montana Tech International student, Melody was hosted by the University of New South Wales which is located in the coastal city of Sydney, Australia.

The title of Melody's master's thesis is, "Using Domestic Pets as Bio-samplers Within Mining Communities." Dogs can serve as an indicator of contaminants. Samples of their hair can be analyzed to reveal the presence of heavy metals and other toxins that exist in the local environment. In her thesis, she is looking at the results from numerous dog hair samples that she has taken in and around the area of Butte, Montana. Butte has an extensive history of underground and surface mining. Melody explained that her technical tasks pertaining to her thesis while at the University in of New South Wales, included: background research, analysis of data previously collected in Montana, and development of research statistics.

While in Australia, Melody worked under the direction of Dr. Leonte, a statistician. She stated, "There was not a specific program to fit what I was doing for my thesis, but everyone at the University was very good at helping me find a place. I was given my own office space, and even had my own laptop."



Melody traveled to Broken Hill, Australia, to obtain a few more dog hair samples. Broken Hill is historically a lead mining town with very similar contamination problems as found in Butte, such as attic dust. In regard to her trip to Broken Hill, she said, "This was a successful research trip. I got all the samples I wanted and made many friends. It was quite the experience to be on my own doing research. Of course, I was in contact with both Dr. Peterson and Dr. Leonte." When Melody was doing her research in Broken Hill, she did a radio interview concerning her research, and had a webpage created upon which the audio interview can be heard. Click on this link to hear about Melody's research in her own words: <http://www.abc.net.au/farwest/stories/s1154285.htm>.

Ms. Madden reported that there is much to do within and around Sydney. She added, "There is no chance that anyone would get bored. When traveling there are hostels everywhere to stay in and airfare is significantly cheaper than in the U.S. I was able to fly to Cairns, then to Brisbane, and back to Sydney. It is wise to learn the bus and train system right away. Once mastered, getting around is fun and simple." In reference to the campus of the University of New South Wales, she stated that there are tons of places to eat and activities to take part in, such as dances, movies and, parties.

Melody sized up her experience with Montana Tech's International program with the following statement: "Awesome! It's the chance of a lifetime. I learned so much, not just about school, but about myself and cultures other than America."



[International Program](#) > [Ongoing Research](#) > Cycle Voltammetry and Chrono Potentiometry

Dave Douglas spent six weeks at James Cook University in Townsville which is located on the coast in tropical Queensland, Australia. Townsville has a population of approximately 140,000 people and is ideally placed as a base for exploring the Great Barrier Reef. Townsville is noted for its beautiful climate and relaxed lifestyle. The university takes its name from the eighteenth century British Navigator and explorer, Captain James Cook. Captain Cook's epic voyages contributed significantly to the world of science.

Dave is working on his master's in the field of Metallurgical and Materials Engineering at Montana Tech. While he was at James Cook University, he was looking at the differences between a rotating disk electrode and a rotating cylinder electrode. He said, "I ran tests to note what the differences were between cyclic voltammetry and chrono potentiometry. The tests were done with rotating the electrodes at 25 rpm and non-rotating the electrodes in a no additive copper electrolyte and in copper electrolyte with Guar. I thought they were very willing to help me out with my research and to teach me what they knew. Their facilities were very nice and I especially liked the one-on-one attention that I received while there.



While in Townsville, Dave enjoyed walking the magnificent beaches and shopping. He said, "I think this was a great opportunity for me and I'm very thankful for having it available to me. It is a great way to travel and see other people and cultures while getting some work done at the same time.

Dave had this advice for others contemplating Montana Tech's International Exchange Program: "If any student is ever given the option of doing any international research, my advice is to, take it! It is well worth the time and effort for any length of stay."



International Program
MONTANA TECH OF THE UNIVERSITY OF MONTANA

[International Program](#) > [Ongoing Research](#) > Alkaline Sulfide Gold Leaching

Darby Stacey is working on his master's degree in Metallurgy at Montana Tech. For his thesis, he is studying the electro chemistry of alkaline sulfide leaching systems which are the important factors that make gold leaching economical and faster. The title of this thesis is, "Alkaline Sulfide Gold Leaching".

Darby spent two months at Monash University which is located in Melbourne, Australia. Melbourne, a port city, is a large commercial and industrial center where many multinational corporations are located.

While conducting research for his thesis at Monash University, Darby was under the direction of Matthew Geffrey. Darby stated, "The program was excellent. Monash University had world class equipment. I got about six months of research done in about three weeks. They were very patient and nurturing with me, brought me up to speed on how electro chemistry works, and taught me how to use the equipment." He said that he did about one third of the research for his master's thesis while in Australia.



While attending Monash University, Darby lived near the campus in the Bayview Conference Center which houses many students from the University. He said he now has many friends all over the world from the people he met during this program. He added that while in Australia, he surfed at Turquay Beach, one of Australia's top surfing beaches and he took a nature tour off the Gold Coast which had both jungle and untouched beaches. While in the city, he attended concerts and plays in downtown Melbourne, including a concert of "The Who".

In reference to other students who are interested in Montana Tech's International Program, Darby said, "Get involved with this program. I had "zero" out-of-pocket expense and I got a lot of research done, as well as being able to see a different part of the world."



[International Program](#) > [Ongoing Research](#) > **Surface-Enhanced Spectral Data**

Josh Junkert is a Montana Tech student working with Dr. Courtney Young on his master's program in the field of Metallurgical and Materials Engineering. Josh spent the summer at Griffith University performing cutting-edge research relating to the global gold mining industry. Griffith University is located in Brisbane, in the sunshine state of Queensland. With 1.1 million people, Brisbane is Australia's third largest city. Brisbane has a subtropical climate with average highs of 70 degrees in the winter and 85 degrees in the summer. The city is a modern cosmopolitan center with museums, cafes, shopping and nightlife. The city offers beaches, river walks, gardens, wildlife parks with the country's largest population of koalas.



Concerning his work while at Griffith University, Josh stated, "Research was conducted using a red-laser Raman spectrometer constructed by Dr. Gregory Hope, the Head of Science and a professor of physical chemistry, to retrieve surface-enhanced spectral data pertaining to my thesis subject of interest. Special thanks go to Gretel, Kim, and Carolyn, Ph.D. students of Dr. Hope, for their time and patience while I learned the facilities available."

In reference to Montana Tech's International program, Josh said, "Hopefully, opportunities like this will be possible for future student generations to come. It is evident that relationships formed on an international level can blossom into future research opportunities as well as possible international job placements. In the world today, with so much turmoil, this can only help create a little more understanding that we must operate on a one world economy way of thinking. Once again, thanks to all that made this opportunity possible."

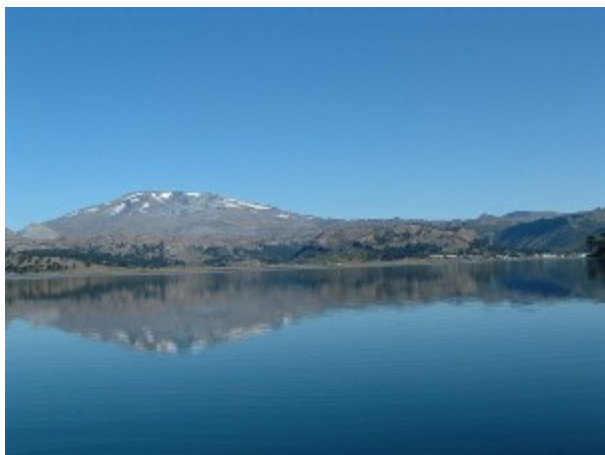


[International Program](#) > [Ongoing Research](#) > **Diel Changes in the Chemistry of Streams**

Steve Parker is an assistant professor of chemistry at Montana Tech and is also currently pursuing a Ph.D. in Geology from the University of Montana. Steve has been partially supported in his thesis research work by Montana Tech's International Program.

In March of 2004, Steve was in Argentina for two weeks. His mentor from Montana Tech was also on this trip and the two of them completed several days of field work while there. The data from these water sampling activities on the Rio Agrio will be a part of his Ph.D. thesis. During that time, he also attended the "International Workshop on Geogenically Acidic Water Systems: Volcanic Waters, Mining Lakes and Rivers. During a follow up trip he attended the sixth meeting of the International Association of Volcanology and the Chemistry of the Earth's Interior committee on Volcanic Lakes.

Steve's proposed title of his thesis is "Investigations into the Occurrence and Causes of Diel Changes in the Chemistry of Streams". He stated, "The Rio Agrio (Sour River) is derived from geothermal springs on the sides of the Copahue Volcano. The acidic water and high metals concentrations are similar to many mining impacted rivers in the American west. We have been studying this geogenic acid river to see what similarities and differences it has to acid mine drainage."



While in Argentina, Steve toured several of the large Argentine national parks along the Andes in central Patagonia. In which, he stated, "The scenery is spectacular." He attended barbeques where the main course was roasted goat, and he climbed to the summit of the Copahue Volcano which is still considered active (last erupting in the year 2000).

In evaluating Montana Tech's International Program, Steve stated, "I am very pleased with the international travel program and hope that more students can have the opportunity to interact professionally and personally with students and scientists in other countries."



[International Program](#) > [Ongoing Research](#) > Crack Resistant Aluminum Welds

For Tim McInerney, a graduate student working on his master's degree in Metallurgical Engineering, Montana Tech's Thesis Abroad program meant a three-month stint in Berlin in the Fall of 2002, where he worked in a lab at the Federal Institute for Materials Research and Testing.

While in Berlin, McInerney found himself working in a large laboratory with other students as well as "doctor engineers." His research involved trying to stop aluminum from cracking when it was being welded. McInerney was working with high-strength aluminum alloys, such as aluminum 6061, which is used in such common things as window frames, car bodies and bicycles. "It was a great experience," McInerney said. "Going to another country, and making all those contacts...and I learned a lot." The researchers were "very educated people," McInerney said. "They know their stuff. They helped so much."

