

Date: March 2010
To: Raymond Coward, Provost
Larry Smith, Associate Provost
From: John W. Shervais, Head, Department of Geology
James MacMahon, Dean, College of Science
Subject: Response to External Review, Department of Geology

First, we wish to thank the external review team and the internal reviewer for their efforts. It is a difficult task to evaluate an academic department based on that department's self study document and a single site visit. We believe that our review team did an exemplary job, and feel that their comments and insights will be critical as we confront the difficult times that lie ahead.

The overall conclusion of the review team is that we do an outstanding job with the resources at our disposal, and pointed out areas that could be addressed through internal departmental initiatives without additional resources. They also pointed out areas where additional resources are needed to address systemic problems, to sustain our strong undergraduate program, and to expand our graduate program.

As noted by the review team, almost all substantive indicators have improved since our review in 2001 and we are well on our way to meeting the goals we set for ourselves at that time. As noted by the review team, extramural funding and publications are up significantly, undergraduate enrollment has increased substantially over the last five years, and our graduate programs are thriving, with a new PhD program finally approved three years ago, and a Master's program that places all graduates in professional positions or advanced degree programs.

Response to Comments and Recommendations

In the following responses to comments and recommendations by the external review team, we have summarized those comments with common themes and grouped together comments from different parts of the report; these summaries are listed below in italic. Our responses are listed directly below each comment summary in roman type.

***The Faculty:** The Geology Department is at a crux: they are really too small to do all the things that are being asked of them, and the addition of only two faculty positions will enable the department to maintain both its research and teaching missions, and increase the stature of the department nationally. With the current talent that has been established, the Geology Department has the potential to be a flagship program for the University, but it is not clear that the status quo of productivity is sustainable.*

The highest priority for the University is to recruit and provide support for a geochemist. This strategic position would bridge several of the department's current strengths and fill a curricular gap that is currently a disservice to the students. Geochemistry is the central field for issues such as climate change, water resources and quality, and environmental sustainability. These topics will literally be billion dollar issues for the state of Utah and the region, for decades to come.

A second critical hire is in geophysics. Geophysics is the most highly funded area of Earth science and is a growth area. The department currently has a sole geophysicist, which makes it difficult to maintain a viable graduate program. A second geophysicist in the right subdiscipline would also provide intellectual bridges between existing strengths in hard rock petrology, paleotectonics, neotectonics and seismic hazards.

New Positions: The solution to the under-staffing of the Geology Department is the usual paradox of being simple yet very difficult: the University should invest in at least one, and preferably two, new faculty slots. This is in fact an investment, as it would result in greater overall productivity of the department, in terms of enrollments and research dollars, hence will enhance the productivity of the university as a whole. Further, this investment in additional faculty would nudge the program up to the next level of achieving national and international stature and becoming a flagship program in the state. New faculty in the right areas, such as geochemistry and geophysics, will greatly enhance the department's ability to attract large-scale research grants via collaboration with other departments.

Response: We agree. Replacing our geochemistry position and adding a geophysicist position must be our highest priority. Doing so will require the support of College and higher administration. Incorporating adjunct faculty members from other departments and institutions can assist in graduate advising, but will not address the curricular aspects of this issue.

Curriculum Revisions: The curriculum needs to be completely redesigned at the grassroots level. The review team believes that the status quo is an amalgamation of traditions and initiatives, which is not doing a great service to the students and not an efficient use of faculty resources. The curriculum is in all likelihood a cause of the low enrollments in some classes.

The absolutely inviolable condition should be set: Every student who enters with an AA and has had a year of math, chemistry, physics, and geology should be able to complete his or her degree within 2 years.

Response: We agree with the Review Team and are taking steps to redesign our curriculum to make it more relevant and user friendly. We have already eliminated a number of redundant or obsolete courses, and are stream-lining our requirements. We have formed a departmental committee to propose additional measures that we will consider at our annual retreat this summer. We anticipate that these efforts will lead to significant changes in curriculum over the next two to three years.

Field Camp: There may be too many credits devoted to field camp [Field methods 3 cr; Field Camp 5 cr]; more typically, six total credits of field methods are required. Thus, we recommend consideration of fewer credits, but more frequent offering. One possibility, which has been adopted by some universities, is to have a short-and-sweet basic course taught annually, then an elective, more advanced course.

Response: The issue of field studies and the time/effort devoted to them will be addressed at the faculty retreat this coming summer. With the addition of campus facilities in Vernal, Price, and Moab, we have an opportunity to rethink how we structure field camp, and to integrate the field

camp experience with students and faculty at these facilities. We also recognize that the current field methods-field camp structure makes it difficult for our majors to take our field camp course. As discussed above, we have formed a departmental committee to address curriculum issues and to propose solutions that we will consider at our annual retreat.

Distribute Advising and Career Counseling: *The current structure of undergraduate advising and career counseling needs to be reevaluated. It is recommended that an Undergraduate Coordinator position be redefined, to oversee all undergraduate advising, curriculum matters, and graduation applications, but not actually handle all of the advising. Advising and career counseling should be distributed among several faculty advisors to be led by the Undergraduate Coordinator, to increase the accessibility of faculty advisors to students, and reduce the workload of the current Undergraduate Advisor. Additionally, the office staff should be charged with providing assistance with recurring paperwork procedures such as course transfers, articulation, and registration. Geology already has office staff with experience in advising (Jean Daddow) and this resource should be utilized.*

Response: We have already begun this process. Our first and most important step has been to increase our office staff assistant, Jean Daddow, from a 75% appointment to 100% FTE appointment. This will allow Ms Daddow to take on new duties associated with undergraduate advising and still maintain her other mission critical functions. Ms. Daddow will be charged with assisting the Undergraduate Director with paperwork and routine advising issues, Banner clearances, and other tasks, allowing the Undergraduate Director to focus on curriculum issues and career counseling. Ms. Daddow has a B.A. degree and served as Curriculum Coordinator when she was employed at Sierra Junior College in California. Further, our Administrative Assistant (Marsha Hunt) has volunteered to assist the Graduate Director with routine paperwork issues; this will be in effect an extension of duties she already performs with graduate students (all of their paperwork related to enrollment, scholarships, and employment).

Rebalance Teaching and Research Duties: *A minority of the faculty are doing the bulk of the graduate education and research in the department, yet teaching and service loads are remarkably even. For example, federal funding is very unevenly distributed, and there does not appear to be a culture of continual proposal preparation: those faculty who do not have a track record of extramural funding should be submitting 2 to 3 proposals per year, or reduce the amount of scholarship in their role statement.*

Response: We agree that the issue of teaching loads is important and that some faculty who are research active bear an disproportional load when teaching and research efforts are considered together. Unfortunately, the small size of our department and the need for us to teach not just service courses but core curriculum, elective, graduate courses makes it difficult for any faculty member to cut back at this time. As our faculty grows and we obtain more depth in each discipline area, we will be better able to distribute teaching loads more fairly.

Undergraduate Recruitment: The review team believes that the best way to increase the number of majors is through strategic recruitment from the department's impressive slate of 1000-level classes. Although recruitment through high school and junior college outreach can be

successful, it involves a huge amount of work, and the departmental faculty is already stretched too thin.

Response: We agree with the Review Team's assessment and are working on ways to improve our undergraduate recruitment in lower division courses. We have already separated our Introductory Geology Lab from the lecture part of the class so that students who transfer in without the lab may sign up for it without retaking Geo 1110. We have also taken steps to accept USU 1360 – Planet Earth in lieu of Geo 1110 if students take the lab for that course, which is now offered separately.

We also plan to place more emphasis on recruiting transfer students through our relationships with RCDE campuses (Uintah Basin, Tooele, Moab), Snow College, and the new USU-CEU campus. To do this effectively however, we need to have faculty in place on each campus teaching intro level courses and some upper level courses.

Set Goals for Increased Research Funding and GA's: *A target of 12 state-funded TAs and 12 externally funded RAs seems appropriate towards the goal of ramping up the graduate program to the next level, to accompany the needed growth in faculty to 12. With the establishment of the PhD program and a goal of 2-2.5 advisees per faculty (on average), faculty should submit two to three proposals per year to provide funding for research programs and graduate assistantships. In kind, and as an incentive, the School of Graduate Studies should match each additional externally-funded GA with a state-funded GA position. The availability of state-funded GAs is critical, especially for early career faculty, to assist in establishing research careers.*

Response: We agree that more resources are needed to support graduate assistants if we are to grow our program. However, we also realize that we are unlikely to receive additional E&G funds for teaching assistants, and in fact, we may need to reduce the number of TA's in order to increase stipends. As a result, we recognize that we must increase our external funding levels in order to generate funds to support additional students. This increase in externally-funded research assistants has already begun, and we anticipate a record number of total graduate students next year, as well as up to nine PhD students.

Renovate and Acquire Space: *The department should evaluate the adequacy of its teaching classrooms and laboratories toward meeting the goals of the expanding undergraduate and graduate programs and forward a strategic plan to the administration. It is beneficial to keep the geology facilities centralized as the program grows. Acquisition and renovation of additional space in the Geology Building should be undertaken to allow expansion of the Department's analytical laboratories, as well as providing space for the growing graduate student population and for post-docs and visiting scientists. In some cases, the use of space can be improved by a systematic review of current space use, clean-up of unused equipment, collections, and labs, and reallocation based on anticipated uses for specific purposes. This may be a task that a small committee could provide the necessary stimulus to move forward on.*

Response: We agree. Central to accomplishing this will be the freeing up of space as Math & Stat faculty are moved into the new Ag Science Building. We are also actively engaged in cleaning out our existing space to make it more usable. We plan to raise funds to support minor

refurbishment and renovation of facilities, so that we may use our existing space more efficiently.

Institutional Issues

Degree Requirements for the PhD: *The requirement for 90 credits beyond the BS and 60 credits beyond the MS are markedly higher than those at peer institutions; typical degree requirements are 60 credits beyond the BS and 30 credits beyond the MS. The excessive credit requirements impact the PhD program in Geoscience in the following ways: (1) this is a disincentive for graduate recruiting, (2) this lengthens the time to graduation and has the potential to lower the graduation rate, (3) this creates an unnecessary financial hardship on the student, department, and advisor, and may reduce the number of students the department and advisor can admit and supervise at any given time, and perhaps most importantly, (4) this places the emphasis of the PhD degree on instruction rather than on research, which does not benefit the students or the faculty.*

Response: We concur. It is our understanding that the Graduate Council is currently discussing this issue and that proposals have been made to reduce the PhD requirement to 72 credits without a Masters. We anticipate that a similar cut will be made in credit hours for PhD candidates with a Masters. We fully support these efforts. We also suggest that a 3-person committee structure for the PhD committee is more consistent with national norms and would result in a more efficient mentoring process because it the committee would be easier to assemble and could meet more often.

Evaluation/Mentoring Committees: *As the review team understands it, the current structure for pre-tenure faculty is that an advisory committee meets and reviews progress annually and submits a report to the faculty member and her or his chair. Our view is that this structure neither serves as an effective mentoring method for the faculty, nor does it provide an honest, critical assessment of progress toward tenure.*

Mentoring is best done by a small (2 to 3 person) group that meets with the faculty member mentee once or twice a year. It is crucial that the faculty have a say, if not total control, over the design of the committee. The committee's role is then to provide honest, straightforward advice to the faculty, in light of the previous year's productivity and the upcoming year's goals. Under no circumstance should the mentoring committee's recommendations go into the record. Otherwise, motives other than honest advice enter.

Formal annual evaluation by the committee has the potential to be harmful by demoralizing the faculty and is an inefficient use of time. Clearly, annual performance evaluations by the chair and dean are necessary, and if done conscientiously, provide the necessary evaluation and institutional paper trail regarding progress towards tenure and promotion. The review team believes that a single pre-tenure review by committee during the third year is sufficient to augment the annual evaluations by chair and dean, to direct the candidate in a successful direction.

Response: We agree, and support efforts by the Provost to reform the current system. In particular, the Formative and Summative functions should be separated so that those who assume the role of mentor are not recast as evaluators; this is central to all peer review systems. We support change to a smaller (3 person) promotion advisory committee charged with formative assessment and mentoring, and a full vote of all department faculty for summative evaluation in the final tenure year.