TO: bob smith, provost

FROM: Lloyd R. Heinze, PhD, P.E.; Chair Bob L. Herd Department of Petroleum Engineering

RE: Graduate Review Bob L. Herd Department of Petroleum Engineering

DATE: 15 July 2010

The Petroleum Engineering Department has experienced a huge increase in undergraduate enrollment (206 to 452) over the last six years. Because of this rapid growth, the department has recently implemented strict entrance requirements. These requirements are in place to assist students in ensuring that they are capable of success in the rigors of the engineering program and still assist the University in retention (in the event a student moves into another major). There are relatively few universities that offer Petroleum Engineering as a major (16 in the US) and the department is vital to the oil industry as it produces 11% (82/718 in 2008-09 and 99/900 in 2009-10) of the US’s supply of Petroleum Engineers.

The current seven tenure track faculty members are heavily overloaded in teaching workload. During the previous graduate review (five years previous) the provost’s office acknowledged and committed to the need for additional tenure track faculty beyond the seven tenure track at the time. Due to the overloaded teaching conditions and low salary (in comparison to industry), most of the faculty at that time have left academia. The department has been able to regain the number from the first review (Spring 2004) but in the meantime, enrollment has increased the teaching workload. Currently, four of our faculty members are over 60 years old (60, 60, 67, and 69). The student to faculty ratio is 35:1 which is twice the Whitacre College of Engineering and University averages of 15:1. Only two of the seven tenure track faculty members from the previous graduate review, five years earlier, remain due to high workloads and low (compared to oil industry) salaries. In order to bring this ratio down to 16:1, the department needs to grow to fifteen tenure track faculty. To increase faculty the department proposes to hire two tenure track faculty per year for the next six years:

1) Hire two new faculty members per year for the next six years:

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Hire Faculty</th>
<th>Retiring Faculty</th>
<th>Student: Faculty Ratio</th>
<th>Total Faculty</th>
<th>Research $ (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>2</td>
<td>0</td>
<td>27</td>
<td>9</td>
<td>1.2</td>
</tr>
<tr>
<td>2011-12</td>
<td>2</td>
<td>1</td>
<td>25</td>
<td>10</td>
<td>1.4</td>
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<tr>
<td>2012-13</td>
<td>2</td>
<td>0</td>
<td>20</td>
<td>12</td>
<td>1.7</td>
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<tr>
<td>2013-14</td>
<td>2</td>
<td>1</td>
<td>19</td>
<td>13</td>
<td>1.8</td>
</tr>
<tr>
<td>2014-15</td>
<td>2</td>
<td>1</td>
<td>18</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>2015-16</td>
<td>2</td>
<td>1</td>
<td>16</td>
<td>15</td>
<td>2.1</td>
</tr>
</tbody>
</table>
2) Hire one Associate/Full Tenured Professor and one Assistant/Associate Professor each year.
3) Budget startup packages of $300,000 per new faculty member ($600,000 per year).
4) To boost research capability in the Department, adjust teaching schedule for all faculty to instruct three courses per nine months.
5) Grow the graduate student population from 30 to 75 (five graduate students per tenure track faculty member).
   a. 2:3 Doctorial: Master ratio
   b. Support Doctorial candidates at $30,000 per year (stipend and tuition and fees)
   c. Minimal support of Master candidates (50% sponsored)
   d. Continue graduate leveling certificate program
      i. Solves industry cross train program
      ii. Preparation pathway for potential graduate students
      iii. Develop leveling courses for distance delivery
6) Grow research expenditures to $2.1 million ($140,000 per tenure track faculty member).

Clarifications on the review:

1) Graduate Certificate is leveling program (five petroleum & one to three geology courses).
2) Graduate Certificate courses are not counted as part of the Master 33 hour course work. These courses are listed as leveling in the catalog.
3) The appendix items were given to the graduate school in March and are items listed on the website.
4) Previous graduate review was for 1997-2003 (dated March 2004). This review is one year early and should have occurred 2004-2010 (dated March 2011).
5) Significant loss of prep time occurred (initial data delivered by graduate school late November 2009, promised summer 2009). This and incomplete report of last year’s data was due to computer record software changeover.
6) Report by outside reviewer is more relevant to the actual status of the department.

Summary:

It is critical that the department be permitted to strengthen the faculty head count as it continues to produce the quality petroleum engineers that the industry so desperately requires. Our current faculty are extremely dedicated and strive to provide the very best educational opportunities to our students. Increased research expenditures will be the result of hiring additional faculty.