A Brief History of Nuclear Sciences at the University of Missouri

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Process

The document was compiled by Jay Dow, Professor of Political Science, Paul Ladehoff, Director of the LL.M. in Dispute Resolution program, Bill Wiebold, Professor of Plant Sciences, and Bill Lamberson, Professor of Animal Sciences (chair). The committee was appointed by Craig Roberts, Chair of Faculty Council, on September 18, 2013, and given the charge to develop a succinct history of the administrative structure affecting the Nuclear Sciences Engineering Institute (NSEI) beginning with its move from the College of Engineering to the Graduate School, including timelines, program reviews, proposals for moving back to an academic department, and the current status. Membership of the committee was endorsed by the Chancellor, the Dean of Engineering, and the NSEI faculty (hereafter, the principals).

The committee compiled the History by reviewing an archive of documents held in the Graduate School, with supplemental information provided by the Office of the Chancellor, the Dean of Engineering, and NSEI faculty. The committee reviewed documents including, but not limited to, previous histories, reviews, meeting minutes and correspondence totaling more than 1500 pages. The principals were given access to all documents and given the opportunity to suggest names of individuals to be interviewed by the committee. The committee formally interviewed twelve individuals and had less formal conversations with others. A few individuals declined to be interviewed. Many of the incidents that influenced the course of events happened 10 or more years ago. Certainly, not all individuals interviewed, even the principals, had complete knowledge of all aspects of the picture, and memories fade over time. In exercising this responsibility, we recognize that many MU faculty beyond those currently residing in NSEI are affected by the organizational structure of nuclear sciences and engineering. The committee has done its best to piece together as accurate representation of events as possible.

Executive Summary

Nuclear engineering and sciences enjoy a distinguished history at the University of Missouri. Nuclear engineering and sciences developed in the College of Engineering, Department of Chemical Engineering, and gained momentum in the mid 1960’s with the construction of the University of Missouri Research Reactor. From that time, degree programs and the tenure homes of affiliated faculty have moved between the Graduate School and the College of Engineering. Prior to the late 1980’s, Nuclear Engineering was housed in the Graduate School. From 1989 to 2002 Nuclear Engineering resided in the College of Engineering. In 2003 NSEI was created as a unit within the Graduate School. This fluidity in program and faculty location partially reflects a campus tension over whether MU should focus on nuclear engineering or on the nuclear sciences more broadly. This tension raises two questions that
shape the current controversy over the administrative organization of NSEI. The first centers on where degree programs are housed. The second is where the tenure homes of faculty reside. Graduate degree programs are generally housed in departments or colleges, or sometimes in the Graduate School. It is unusual for faculty to have tenure homes in an institute, as most faculty’s tenure is in a department in a school or college. NSEI is the only MU campus example of a graduate degree-granting program with its core faculty holding tenure in the Graduate School.

The question of where nuclear engineering and its faculty properly belong drives the current discussion surrounding NSEI. Faculty stakeholders in this discussion are located in NSEI and in other campus units and differences over the proper organization of nuclear engineering and sciences are as much disputes among faculty as they are a dispute between faculty and administrators. The evidence is that NSEI properly trains graduate students, albeit in a relatively narrow band of nuclear engineering. However, the campus and College of Engineering teaching and research profiles in nuclear engineering and sciences may be limited by the current organizational structure.

**History** (see timetable, page 7)

*Events leading to development of the Nuclear Sciences Engineering Institute (1966 – 2003)*

The modern era of nuclear sciences at the University of Missouri began with nuclear sciences as a subunit of the Department of Chemical Engineering in the 1960’s. Nuclear sciences at MU was significantly advanced by the development of the MU Research Reactor, which became operational in 1966. At about that same time, a graduate program in Nuclear Engineering was established in the Graduate School. The graduate program complemented an undergraduate program in Nuclear Engineering that was initiated at the University of Missouri – Rolla. The MU graduate program was unusual in that faculty members evidently had the program in the Graduate School as an academic home, yet they were jointly administered by the Graduate School and College of Engineering, and issues such as salary decisions were determined by the Dean of Engineering. In 1989, the graduate program was shifted to the College of Engineering under Dean Tony Hines. The tenure homes of the nuclear engineering faculty were transferred from the Graduate School to the College of Engineering, and all subsequent faculty appointments were made through the College of Engineering. This was evidently a seamless transition, as current NSEI faculty members were not aware of any changes associated with it. For several years after the move, nuclear engineering operated somewhat like a department within the College of Engineering, but did not have full department status, perhaps because of the small number of faculty and lack of an undergraduate program. Lack of department status and confusion associated with that status may have contributed to the tension evident in subsequent years.

In 1994, Dean Hines was succeeded by Dean James Thompson. Dean Thompson was charged by campus administrators with increasing the level of research activity in the College. One result from the increased emphasis on research was a shifting of resources from centers to departments within the College. There was a perception by members of the College of Engineering faculty of a lack of transparency in administrative decisions. A number of faculty members across the College, including at least two
members of Nuclear Sciences, signed a letter expressing concern regarding the administrative approach and the letter was submitted to the Dean. Concurrent with this event, two ongoing faculty searches within Nuclear Sciences were suspended. The committee was unable to determine the reason that the searches were suspended, but the coincidence in timing with the letter from faculty to the Dean increased distrust of the College administration. From 1996 to 1998, Nuclear Sciences faculty members filed approximately 13 grievances with members of the Engineering administration named as respondent. The nuclear engineering faculty had standing to file these grievances because they were faculty in the College of Engineering. The general topics of these grievances were compensation, hiring decisions, and equipment. There were mixed results of the grievance process, with panels finding in some cases for the grievant and in others for the respondent.

Chancellor Wallace initiated an effort at mediation in 1996, but that effort failed. There was a general escalation of conflict and Dean Thompson, without informing the Nuclear Sciences faculty, sought input from an external advisory group. This caused concern because of a misperception that it was part of a regular external review, which was conducted at nearly the same time. Nuclear Sciences faculty expressed concern about the external review, as they were given only a few days to suggest potential review team members. The review was conducted in 1999 and produced mixed results. The reviewers commented on the strengths and productivity of the individual faculty, but noted that most of the productivity was centered on a few individuals, some of whom have since left MU. Review team members identified an opportunity for a broad-based program with contributions from Radiology, the Reactor, Chemistry, Physics, Chemical and Mechanical Engineering in conjunction with the core Nuclear Engineering faculty; however, it was clear that this potential was not being realized. The review team recommended that the Nuclear Sciences faculty be incorporated into existing departments in the College of Engineering, and Dean Thompson favored that change. The Chair of Mechanical Engineering invited the Nuclear Sciences faculty to join the Mechanical Engineering Department, but there was no resolution to the issues already dividing the Nuclear Sciences faculty from the College of Engineering, and Nuclear Sciences faculty rejected the invitation.

Creation and Review of the Nuclear Sciences Engineering Institute (2003 to 2010)

Provost Deaton favored Dean Thompson's proposal to move the Nuclear Sciences faculty into Engineering departments, but Nuclear Sciences faculty adamantly opposed that option. Vice-Chancellor for Research Jack Burns proposed an alternative plan to create a Nuclear Sciences Institute within the Graduate School in conjunction with an opportunity to compete for a center grant. In 2003, Chancellor Wallace approved creation of the Nuclear Sciences Engineering Institute (NSEI) on a trial basis with Professor Wynn Volkert as Interim Director. The Institute consisted of five core faculty members and several associated faculty members from across the University. At this time the tenure homes of the core faculty were transferred to NSEI within the Graduate School. The Institute received center grant funding, and was expected to be self-funded and subject to review after five years. According the Chancellor Wallace’s memorandum, the continuing status of NSEI was clearly dependent on results of a
formal review. Both faculty and administration expressed optimism with respect to increased activity and collaboration in nuclear sciences and engineering.

Dr. Suzanne Ortega was Dean of the Graduate School when NSEI was created and she initially had administrative responsibilities for the Institute. She was succeeded by Dean Pam Benoit. The Institute Interim Director (Volkert) retired in 2006 and a search for a replacement was unsuccessful. Despite the leadership transition, in some respects this was a relatively quiet and productive period. These years witnessed declining state support for the University and increasing pressure for NSEI to become self-supporting. There is a question about exactly what self-supporting meant. Does it mean generating revenue to offset General Operating dollars currently provided for salary lines (\$840K per year), or just support beyond the salary lines provided by General Operating funds? In general, revenue is obtained through indirect costs from grants and from tuition. NSEI has only limited ability to generate tuition revenue because there is no undergraduate program and graduate tuition is usually offset by fee waivers. Although NSEI faculty members are effective at attracting grants, a substantial share of this funding is in training grants which has sustained a large graduate program, but provide little if any salary offset or indirect cost funds. In 2008, the 0.50 FTE salary support recovered from the retired Director position was used for salary increases and to meet GO budget cuts.

Although successful in some instances, the anticipated synergy of collaboration was not realized. Internal differences between the core NSEI faculty and affiliated faculty partially contributed to a gradual decline in collaboration between NSEI and other faculty engaged in nuclear engineering and sciences. During this period, the core NSEI faculty changed their by-laws to effectively put control of the Institute in the hands of its full time, resident, faculty. These by-laws are “department like” in that they contain processes for governance, tenure and promotion, and related considerations. Consequently, affiliated faculty were further removed from the day-to-day operations of the unit. While NSEI faculty have occasionally reached out to university faculty, there has not been the expected reciprocation.

In 2006, UM President Elson Floyd requested that Chancellor Deaton initiate discussions with UMR to consider a possible merger of nuclear engineering programs between the two campuses. A broad-based committee was appointed, but discussions broke down after a single meeting of the committee.

University administration made plans for the mandated review of the program in 2008. With the departure of Dean Benoit, the review was delayed until 2010 and new Graduate Dean George Justice took over administration of the Institute. There was once again controversy over the makeup of the review team. None of the individuals recommended by NSEI as potential reviewers were included in the review team, as members of the administration viewed the recommended individuals, at least some of whom were former students or collaborators, as too closely associated with members of the Institute to provide an objective review.

The findings of the 2010 review were similar to those of the 2002 review. The team identified many positives in the program, including the productivity of certain core members of the Institute. However, as in 2002, the reviewers concluded that the broader nuclear sciences program at MU was not achieving its potential. This inability to reach the campus’ potential in nuclear engineering and sciences was driven
in part by the isolation of the core faculty. Five approaches were suggested in no order of preference as possible ways to move NSEI forward:

1) Continue the program as it currently is, with no replacement of faculty, for as long as the faculty members are judged to be collectively successful. Conduct reviews at three year intervals.

2) Return to the 2002 vision and invite all campus faculty members with interest in nuclear sciences to renew their relationship with NSEI. Add three faculty lines and recruit a new leader from outside.

3) Relocate NSEI as a department into a college, recruit a new leader from outside, and add a minimum of five new lines.

4) Move current faculty members and academic programs to new academic homes, reorganize NSEI as a research institute within the Office of Research, and invite faculty members with interest in nuclear sciences to re-engage their relationships with NSEI. There would be no faculty members with tenure homes in NSEI and no academic programs within NSEI.

5) Move individual NSEI faculty members to new academic homes and terminate or relocate academic programs to existing academic units.

Professors Robertson, Gahl, and Jurisson commented on the report. They recommended Option 4 as the only viable alternative given the value of nuclear sciences to the campus and the fiscal constraints on the University.

Reorganization of the Graduate School (2011 to 2013)

After the review and in response to calls for increased administrative efficiency, Graduate Dean Justice initiated discussions concerning reorganization of the Graduate School. All faculty members with tenure homes in the Graduate School (Truman School and NSEI) would be transferred to other academic homes.

In 2011, the Medical Physics emphasis area of the Nuclear Engineering Graduate Program received accreditation under the leadership of Dr. Evan Boote. This is a collaborative program with the Washington University (St. Louis) Department of Radiation Oncology. Dr. Boote has since left MU. A major portion of the specialty courses offered by MU in this emphasis area have been taught by an adjunct faculty member from Texas A&M via distance learning. Failure to file high quality annual reports has raised questions regarding the continued accreditation of the emphasis area. Admissions to the Medical Physics program are currently suspended, and there are no immediate plans to replace Dr. Boote’s position.
In March 2012 Provost Foster and Dean Justice announced plans for reorganization of the Graduate School. The NSEI administrative structure was to be dissolved. The graduate program was to be maintained until current students completed their degrees, but no new admissions to the Graduate School’s graduate program in Nuclear Engineering would occur as of Fall, 2013. NSEI faculty members have been given until July 1, 2014 to find new tenure homes. Concurrently, a group of faculty members with interest in nuclear sciences and nuclear engineering (NEP) under the leadership of Professors John Gahl and Naz Islam proposed a new interdisciplinary graduate program in Nuclear Sciences and Engineering. The program, administered through the College of Engineering, was approved by the Graduate Faculty Senate. NSEI faculty have questioned the legitimacy of new graduate program and called for the dissolution of the Graduate Faculty Senate. As of 1/30/2013 the new Nuclear Engineering Program was the only nuclear engineering program authorized to admit students.

In an April 2012 meeting of campus administrators, College of Engineering administrators, and NSEI faculty, three ideas were proposed for relocation of the NSEI faculty:

1) move NSEI into Engineering as a unit;

2) move NSEI faculty members as individuals into Engineering departments; and

3) move NSEI faculty as a unit into an existing department in Engineering.

Over a period of weeks, Dean Thompson rejected the idea of NSEI faculty forming a four-person department. Professors Loyalka and Prelas reject the proposal to move NSEI faculty members as individuals into departments in Engineering. Professor Loyalka rejected the proposal of moving the NSEI, with partial autonomy, into Mechanical Engineering, citing past conflicts.

Current status

As of this writing (January 2014), there are a number of unresolved issues. The NSEI faculty remain in the Graduate School and face a mandate of identifying alternative tenure homes by July 1, 2014. Accompanying that transition will be the transfer of fiscal administrative responsibilities. The NSEI faculty members have thus far been unwilling to accept students through the NEP, thus funding for students provided by training grants is not being used.

This conflict has now existed for nearly 20 years despite the good intentions of nearly everyone involved to promote a productive program in nuclear sciences and engineering. The cost to the institution has been enormous in lost productivity as well as in tarnished reputation through the many negative news articles that it has engendered. Although individual members of the faculty active in nuclear sciences, particularly NSEI faculty, have been individually productive, there has also been an opportunity cost of lost collaboration among the faculty members. This conflict has been largely understood as a dispute between faculty and administration centered on differing visions of nuclear engineering and sciences, with one vision espoused and articulated by the NSEI faculty and another by the administration. This is part of the conflict, but to the extent this is the case, the administration is also articulating views that
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are held by other faculty stakeholders. The dispute is conflated as administration versus NSEI faculty, when much of the contention surrounding the organization of nuclear sciences and engineering resides in differences among faculty as to how to best advance research and teaching in nuclear engineering and nuclear sciences. Some of the interests that must be balanced in this dispute are those of the NSEI faculty and relevant faculty in the College of Engineering and other academic units. The members of this committee hope that with the reorganization of the Graduate School and turnover of University administration, this costly and often bitter dispute can be resolved and put behind us.

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