

## **AC 2007-3090: MANAGEMENT CHANGES AS A THREAT TO ONSITE DELIVERY OF NUCLEAR ENGINEERING TECHNOLOGY PROGRAMS**

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# **Management Changes as a Threat to Onsite Delivery Of Nuclear Engineering Technology Programs**

## **Introduction**

The University of North Texas has delivered a Nuclear Engineering Technology degree program to the Comanche Peak Steam Electric Station continuously since from 1989 to the present. The program is one of only two ABET accredited Nuclear Engineering Technology programs in the United States and has been since 1995 when it became the first Nuclear Engineering Technology program to be accredited.

The program is unique in that its sole source of funding is from the utility that sponsors the University to deliver the program. This means that two faculty members and a part time secretary are supported by the program. Instructors in related topics are hired as their expertise is required to deliver the program. The State of Texas contributes no money toward the operation of the program.

The program has enjoyed what could only be described as a high level of support through its first 16 years. Retirements of initial program supporters and other changes have somewhat eroded that support. One strong underpinning for the program is that the plant accrediting agency, the Institute of Nuclear Power Operations, has identified the educational program at Comanche Peak as a noted strength in three consecutive accreditation visits.

The program is offered only in the evenings at the plant site using utility training department classrooms. The courses are taught by two dedicated individuals or by qualified adjuncts with special knowledge of the subject matter. Some courses are delivered by videoconference.

## **Threats to the Program**

Each perceived threat to the continuation of the program is listed below. This “threat catalog” is concluded by a ranking of the risk of the threat to the program both in terms of the ability of the faculty to influence the relative risk and the potential to result in the program termination.

### **Outsourcing of Employees**

It has become commonplace in many industries to reduce the number of direct employees and to hire contractors for certain functions. The utility began this approach in 2002 by outsourcing the secretarial functions, the Information Technology function, and some other support functions to subcontractors. Later, selected Engineering functions were outsourced to another contractor. The total number of personnel was also reduced in this process. The immediate impact of this activity on the program was to reduce the number of people eligible for utility support in college expense reimbursements. Some of the subcontractors did provide reimbursement to the students for direct expenses. A cloud of uncertainty seemed to envelop the outsourced employees in that they had become susceptible to transfer to remote locations based on the needs of their new employer. The impact on the educational program was that few of them were willing to commit to a long term proposition such as seeking a degree.

### Low Employee Turnover Rates

This category initially sounds like a contradiction to the impact of outsourcing, but in fact it is not. Sustained low employee turnover rates results in an eventual decrease in the number of people willing to pursue education both because interested parties eventually graduate and are not replaced and because a static work environment has very limited advancement opportunities for those who seek to advance through education, a condition that eliminates one motivation for seeking additional degrees. Just as too much uncertainty can reduce motivation, too much stability can result in the same consequence.

### Retiring “Champions”

The senior personnel who possessed the budgetary authority to initiate a program of work force education are most likely in their fifties or early sixties in age. This means that in less than ten years, it is extremely likely that these individuals, and the support that they brought, will retire. This makes it critical to maintain excellent relationships and to constantly inform the new management of developments. Beyond the upper levels of management, the program administrators must also remain valued and reliably informed about the program with factual information about both student progress and budget adherence.

The replacements for retiring “champions” usually have more interest in matters that allow them to place their mark on the institution than in maintaining programs initiated by their predecessors. There is no good way to change this condition.

One encouraging development was a positive article in the Nuclear Professional magazine<sup>1</sup> that described the extensive educational efforts made by the utility. This positive commentary attributed the program’s existence to the attitude of the plant management and thus assured some additional continuation beyond what might normally be expected.

### Malevolent Financial Wizards

Managers who place priority on financial impact are generally quick to point out that there is no direct relationship between education and the financial performance of the plant. This objection must be over-ruled by senior management if the program is to survive because the academics have no access to the internal discussions during the budget process. In the mind of the senior management, the program must represent a long term investment and a contributing case for high marks by external evaluators. The program can then be thought of as contributing toward lower insurance rates and reduced oversight burdens because of the resulting high ratings during evaluation.

An example of this threat occurred in 2006 when the financial services manager brought up this exact argument, that there was no direct relationship between plant performance and results from the educational program. His comments were relayed by program supporters.

The program is especially vulnerable to negative comments from the financial analysts during management transitions because it takes time to communicate the program’s value and to provide the positive experiences of program involvement to the managers.

Not all threats emanate from the utility side of the partnership. A University can destroy a remote program through poor handling. Some examples of how this can happen follows.

#### New University Management

A new department head or a new dean is unlikely to be sensitive to the effort that has gone into establishing a long running relationship. Questions of customer service, delaying actions to obtain more information, and outright statements of suspicion of corporate employees can be serious impediments to the program. There is sometimes evidence of a desire to deliver minimal effort for the money in the approach of some University managers. Usually this can be cured by statements from University's accounting department and the Principal Investigator.

An example of the threatening actions of a new member of the university management team can be seen in the new policy announced in the following email:

“As a matter of policy effective immediately, anyone that is to buy a course has to be for the purpose of engaging in funded restricted research that has to be approved by the Department Chair. This is the only way we can justify us using adjunct professors for our courses to ABET and the only way we can increase the quality of our programs and achieve our future, already established goals.”

This policy effectively limits the time that the coordinator of the program can perform his administrative duties at times other than summer if the financial contribution of the program is not valued.

#### Accreditation

Counter-intuitively, the act of maintaining accreditation threatens the small program because it looks so different from large on-campus programs. The program coordinator has the task of making sure that the program's activities are understood within the framework of ABET criteria. The effort by a small faculty to setup and use the processes of assessment is a heavy burden that takes time from recruiting and generating student interest. Failure to maintain the accreditation could be a failure to maintain a contractual requirement and a strongly differentiated program feature.

#### Rating the Risks

The following table represents the authors' efforts to rate the relative threats to the program from its various sources. The threat number represents the average of the perception by all three.

**Table 1**  
**Relative Risk From Various Threats to the Program**  
**Scale 1-10, 10 Being Greatest Risk**

Outsourcing	5.3
Low Turnover	7.3
Retiring Champions	7
Financial Wizard Attack	6.3
New University Management	8.3
Accreditation	4

This rating indicates to the authors that the primary focus should remain on recruiting and relationship building with the plant management. Effort must also be directed to educating and involving University management in the program.

#### The Hope for the Future:

In the September 2006 edition of Nuclear News<sup>2</sup>, TXU announced plans to build six more nuclear power plants in addition to the two units at Comanche Peak that they already own. In order to benefit from the subsidies being offered for early builders of the next generation of nuclear plants, the utility must begin construction by January 2010, a short 2.5 years from now. The Nuclear Engineering Technology program must bridge this small gap to continue to deliver its benefits to the utility and the North Texas Region. Construction offers access to much larger pools of potential students than are found at operating plants. Typically, the ratio is of the order of 10 to 1 in the comparison of numbers of workers during construction to the number required to operate the plant.

#### Concluding Remarks

The relationship between TXU and the University of North Texas has an exceptionally long life that is unique within the University, and, apparently, within the utility industry as well. Recognition of threats to a program's existence and accurate assessment of the degree of risk is important to the maintaining the program's viability. The success enjoyed by the program described in this paper rests as much on recognizing risks and mitigating them as any other cause.

#### References:

1. The Nuclear Professional Magazine, Second Quarter 2005 edition, "Partnering for the Future" pages 18 to 23. Nuclear Professional is a publication of the Institute for Nuclear Power Operations through the National Academy for Nuclear Training, Atlanta, Georgia.
2. Nuclear News Magazine, October 2006 edition, "TXU announces plans for new reactors" pages 13 and 14. Nuclear News is a publication of the American Nuclear Society, La Grange Park, Illinois.