Docket No.
50-128

TEXAS A&M UNIVERSITY

NUCLEAR SCIENCE CENTER

COLLEGE STATION, TEXAS 77843

7 September 1979

James R. Miller, Acting Assistant Director
for Site and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Miller:

The following information concerning the impact of the "Upgrade Rule" on continued operation of the NSCR is provided as per your request.

Since 1962, the Texas A&M Nuclear Science Center has been operated by the Texas Engineering Experiment Station as a service to the University and citizens of the United States. The facility, licensed under 10 CFR Part 50, houses a 1 Mw TRIGA conversion-type reactor used primarily for training and research, with some commercial radioisotope production. Under license R-83, the NSC is allowed to possess certain quantities of SNM which are presently exempted from the requirements of 10 CFR Part 73 - "Physical Protection of Plants and Materials" via the exemptions of Part 73.6. During the seventeen year history of the Center, there has never been an incident involving sabotage or the disappearance of SNM from the facility.

The pending Safeguards Upgrade Rule (Fed. Reg. Notice 43280-285) removes the exemption for fuel residing in-core (73.50) in addition to delineating requirements for security plans at non-power reactor sites. The implementation of these rules at the Nuclear Science Center, as they now read, would have a detrimental effect on the beneficial activities now being conducted at the facility. It is our firm conviction that the resulting restrictions on the facility's use would essentially destroy its value as a research and training tool. Additionally, if the Part 73.6b exemption for fuel reading 100 rem/hr or greater at 3 feet is rescinded or made more restrictive, this would have the effect of forcing the Center to comply with the security requirements of power reactors (Category I), in which case a shut-down of the facility would most definitely follow. Any of the above possibilities creates a situation whereby the benefits supposedly derived by the public in the form of increased common defense and security are far outweighed by the loss of trained personnel, research programs, and radioisotopes needed by the medical, energy, and various other industries.

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As a condition of licensing, the NSC currently maintains and adheres to an NRC approved security plan. This is comprised of barriers, equipment, and procedures appropriate to restrict access to the facility and associated SNM by unauthorized persons during attended or unattended hours. This plan, while extensive, is not sufficient to comply with the Category II requirements as discussed in the Division 5 draft Regulatory Guide for physical security plans. In particular the NSC would be required, as a minimum, to:

1. Install sophisticated motion detection equipment throughout the facility with emergency power.

2. Upgrade the current intrusion alarm system.

3. Modify fuel storage facilities.

4. Secure additional personnel to provide required surveillance over SNM, escort duties, and searches.

5. Develope an experimenter and employee screening and badging system.

6. Change the current lock system to more expensive pick resistant locks.

7. Obtain electronic equipment to aid in randomized searches.

The cost of implementing the above would be considerable, however, the financial requirements of maintaining a security system sufficient to meet the requirements equivalent to Category II facilities as defined in IAEA INFCIRC/225, Rev. 1 (those housing SNM of "moderate strategic significance") would probably be approved by the University administration. This is in spite of a doubtful cost-benefit situation.

The restrictive "security atmosphere" at a research reactor facility is the most devastating consequence of the application of th[illegible]rade rule. One of the primary advantages of a research reactor faci[illegible]s access by qualified members of the education and research community. These include university faculty, staff, and students. It would be totally impractical to screen each of the approximately two hundred individuals using the facility during a typical year who require unescorted access to the facility. This also applies to the many nuclear trainees from utilities who use the NSC periodically. The composite effect, even if Category II requirements were met, would be to so drastically reduce the Center's practical value for research and training that its continued operation by the University would likely be unjustified.

Addressing the consequences of adherence to the IAEC Category I type power reactor requirements (73.50 and 73.60), the cost of further upgrading of the security plan in areas of 24 hour trained guards, complete searches, and physical barriers would mandate a facility shutdown.

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If facility shutdown is the alternative selected by the University administration, there would be far reaching consequences. The facility staff of approximately twenty-five individuals and the operating budget of about $325,000 would eventually be cut entirely, with other university employees performing any required part time maintenance and surveillance activities. The cost of shutting down the facility, even short of complete decommissioning, would be considerable. It would tax limited funds and possibly eliminate another valuable University programs. The shutdown of the facility would be most serious to the academic programs.

The Nuclear Science Center supports 24-28 courses at Texas A&M each year. These involve classes in engineering, physics, chemistry, biology, veterinary medicine, and several other fields. Work ranges from detailed laboratory sessions to reactor demonstrations. There are several courses, such as those in nuclear engineering discussed below, which would suffer drastically from the loss of the Center. It is difficult to predict the impact on other types of programs, but it is certain that the quality of the classes which depend on the NSC for practical instruction in nuclear science would be negatively affected. Such courses are often the only exposure to this field that some non-nuclear students have. Even if the facility remained open, increased security and the associated restricted access would serve to discourage continued use of the Center by these groups in addition to promoting a very negative impression of the field as a whole.

The Nuclear Engineering Department depends heavily on the NSC for several important aspects of its undergraduate program. This is true in both the Power Engineering and the Radiation Protection options of the curriculum. There are currently 225 undergraduates enrolled, many of whom have chosen Texas A&M because of the excellent facilities available to them. The NSC supports courses in Reactor Experiments, Radiation Detection, and Engineering Analysis. The facility is also used extensively for a class in Radiation Protection for industrial hygienists. Some senior nuclear engineering students routinely enroll in courses involving special projects such as measuring reactor parameters or analyzing a particular health physics problem. These individuals, along with several part time student workers and participants in the University's Cooperative Education work-study program, receive practical training impossible in a lab or classroom situation. Also, many of the student workers are ex-military personnel. Employment at the NSC as reactor operators or technicians is often the only means of financial support these individuals have while obtaining a degree. Traditionally they go on to become some of the most productive and dependable employees in the Industry. With the application of stricter security requirements or a shutdown of the facility, a large portion of all undergraduates would be forced to seek nuclear training elsewhere or pursue another career entirely.

There are several graduate programs which also rely on the use of the NSC for valid, state-of-the-art instruction. Nuclear Engineering courses in Nuclear Measurements and Reactor Experiments at the graduate level are taught exclusively at the Center. In order for a candidate for an advanced

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degree to be properly prepared, experience with a reactor facility such as the NSC TRIGA, which is sufficiently advanced to exhibit some of the basic reactor principles, safety systems, and operational procedures common to larger reactors, is essential. For the radiation protection engineer, one required graduate course places the student in a working environment invaluable in training such professionals. Without the experience of working with dose rates, radiological hazards, and analysis equipment comparable to that in a power plant or major laboratory, the health physics graduate is of little practical value initially. Presently there are 28 graduate students in nuclear engineering. A facility shutdown would result in a general degradation of the program quality to the point that many or all of these students would either investigate other institutions or other fields for graduate study. Also, there are at least four graduate students in courses other than nuclear engineering whose thesis or dissertation projects would be terminated without NSC services.

In addition to academic training, the NSC is heavily involved in faculty and staff research. The Departments of Chemistry, Veterinary Medicine, Geology, Oceanography, Civil Engineering, Nuclear Engineering, and Animal Science use the Center exclusively for the production of radioisotopes or activation analysis vital to their projects. Geology, in particular, is engaged actively in research on uranium exploration techniques and possible new uranium sources. Several hundred thousand dollars worth of project funding at A&M depend on the availability of the NSC for specialized activities.

There are also 8-10 smaller post-secondary institutions in the area employing the services of the NSC during a year. In particular, one of these which conducts a two year training program for health physics technicians would very likely discontinue its curriculum, resulting in a loss of about 25 trained people per year. The Center currently provides the only hands-on type instruction these students receive in many areas vital for meaningful radiation safety training. Several other small universities which are already plagued by lack of funds for securing and maintaining adequate equipment would undoubtedly cut their nuclear courses, as well.

A shutdown of the facility would have some deleterious effects on private industry as well. The Center currently produces about 1000 Ci/year of Gold-198 beads for use in the treatment of cancer world wide. Industry representatives have stated that there are almost no other facilities presently available for performing such irradiations. Loss of this service could literally be translated into lost lives eventually. There are also several energy related companies which use NSC equipment and expertise to aid in the search and processing of petroleum products via radioactive tracers or neutron activation analysis.

For a more detailed description of the programs that will be lost if the upgrade rule is implemented see attachment I. This is information which is excerpted from our last annual report.

There is no doubt that it is appropriate to provide protection for the public against the potential consequences of diversion of SNM or industrial sabotage of nuclear facilities. However, the application of the proposed Safeguards Upgrade Rule, in our opinion, provides an unnecessary degree of protection which will very likely result in a substantial decrease in the overall public welfare. If nuclear research and education are to continue playing an important role in solving our nation's problems, a more rational approach to security is necessary that takes into account the special problems of university facilities.

Sincerely,

John D. Randall

John D. Randall, Director
Nuclear Science Center

JDR/ym

cc: Mr. H. E. Whitmore, Associate Director
Texas Engineering Experiment Station

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Attachment