



COLLEGE OF ENGINEERING

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

NUCLEAR ACTIVATION ANALYSIS LABORATORY

September 21, 1979

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

Dear Mr. Miller:

Your letter of July 30, 1979 requested information on the impact of the Safeguards Upgrade Rule in the operation of our nuclear reactor facility (License R-62). Our reactor staff is small and several of them were on vacation in August. Accordingly, we could not meet your deadline of August 15, 1979. Enclosed you will find our response to the 16 questions you posed.

If I can supply additional information, please let me know.

Sincerely yours,

T. F. Parkinson, Director
Nuclear Reactor Laboratory

Encl. (1)

cc: Dr. A. K. Furr
Dr. J. B. Jones
Dr. A. H. Krebs
RSS File

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Response to NRC Request of July 30, 1979

1. What additional features will be constructed walls, vaults, CAS, protected area and costs associated with these.
Construction of approved type vault: \$5000
2. What is the expected total cost to upgrade hardware? - one time cost - alarms, CCTV, guns, uniforms, badges, detectors.
Intrusion system (entry alarms): \$3000
Intrusion system (motion sensors): \$1000
Badges (10 @ \$25 each): \$ 250
Total \$4250
3. What is the expected cost annually - guards, material, screening, two man rule - for an upgraded physical security plan - manpower and hardware?
For Category II Facility:
Security system maintenance: \$ 200/yr
Security guards: provided by the University Security Division
4. What is the cost of shutting down the facility?
Removal and disposal of fuel (\$2000/element x12): \$ 24,000
Removal and disposal of core structure: \$ 10,000
Removal and disposal of tank, etc.: \$100,000
Removal and disposal of shield: \$ 50,000
Decontamination of reactor cell and labs: \$ 20,000
Dismantling of cooling system: \$ 5,000
Total \$209,000
5. What is the annual cost of maintaining possession only status?
Radiological survey, maintenance and administration (0.5 man yr.): \$ 15,000/yr.
6. Effect of loss of program on US industry - (i.e.) engineers and operators for U.S. Nuclear Power Plants.
B.S. engineers (nuclear option): 25/year
M.S. engineers (nuclear option): 8/year
Ph.D. engineers (nuclear option): 2/year
B.S. health physicists: 30/year
7. Effect of loss on medical research, medical treatment.
Cancer research (American Cancer Society) \$ 10,000/yr.
8. Cost of new plans - security, contingency, guard training.
Security planning (0.5 man yr. @ \$30,000/yr.): \$ 12,500
Safety analysis report (1.0 man yr. @ \$30,000/yr) \$ 30,000
Environmental impact analysis (0.3 man yr. @ \$30,000/yr): \$ 10,000
Total \$ 52,000

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9. Considering the impact of implementing the Safeguards Upgrade Rule will you continue to operate your facility?
Yes, at least for the next 5 years
10. Describe the impact of closing the facility on the educational program at your facility (school) - Loss of program and courses.
Without a nuclear reactor facility, it would be virtually impossible to support our Nuclear Science and Engineering program. (See Question 16 for specific courses)
11. What is the size of the facility staff? - Will it be cut?
5.0 Full-time equivalent (permanent staff)
2.0 Part-time equivalent (temporary staff)
If the reactor were shut-down, the permanent staff would probably be phased out.
12. How many students are in the classes? - Will they finish their degrees?
Undergraduate students (engineering): 30
Undergraduate students (biology/HP): 35
Students now enrolled would probably be able to complete their degrees.
13. How many graduate students are in facility - related programs? - Will they be able to finish?
Graduate students (engineering): 15
(D.O.)
14. What is the typical annual operating budget?
Salary and wages \$ 89,000 (1978-79)
Operating expenses 17,500 (1978-79)
Total \$ 106,500
15. With 100 r/hr at 3 feet exemption criteria, can you meet and maintain the SNM at such a level continuously? What would the impact be on current financial and operating resources? How would it maintain the self-protection criteria affect fuel replacement and costs therefore?
No, we expect to qualify as a Category II facility with no "exempt" fuel.
16. How many courses utilize the facility - will they be cut?
NSE 3090, Nuclear Reactor Lab (3L, 1C)
NSE 4010, Radioisotope Techniques and NAA (6L, 2C)
NSE 4023, Nuclear Engineering Lab (6L, 2C)
NSE 4041, Radiation Protection and Monitoring I (2L, 1C)
NSE 4042, Radiation Protection and Monitoring II (2L, 1C)
NSE 4970, Independent Study (Reactor Operator Training) (3H, 3C)
Yes, all the above would be cut.