

UNIVERSITY OF CALIFORNIA, IRVINE

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SANTA BARBARA • SANTA CRUZ

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August 25, 2010

US Nuclear Regulatory Commission
Document Control Desk
Washington DC 20555
Attention: Linh Tran, Senior Project Manager

Dear Ms Tran:

Please find attached the response regarding financials from the earlier RAI.
The SOI was signed but our administration overlooked that they had to have it
notarized, so it is being re-signed and will be sent under separate cover.

**I declare under penalty of perjury that the foregoing and the attached is true
and correct.**

Executed on August 24th 2010

A handwritten signature in cursive script that reads "George E. Miller".

Dr. George E. Miller
Director

A020
NRK

University of California Irvine
Nuclear Reactor Facility License R-116, Docket 50-326
Application for Renewal submitted October 18, 1999
NRC Financial Questions and Comments – dated December 3rd 2009.
Response in Italics – prepared June 2010.

Pursuant to 10 CFR 50.33(f)(2), "applicants to renew or extend the term of an operating license for a nonpower reactor shall include the financial information that is required in an application for an initial license." To comply with this requirement, please provide the following updated and supplemental information to the October 18, 1999, University of California-Irvine (UCI) application (the application) for a renewed license for the University of California-Irvine Nuclear Reactor Facility (UCINRF).

1. The NRC staff will analyze the financial statements for the current year, which are required by 10 CFR 50.71(b), to determine if the applicant is financially qualified to operate the UCINRF. Since UCI's financial statements were not included with the October 18, 1999, application, please provide a copy of the latest financial statements.

The complete University of California financial statement is a 120 page document available on-line at http://www.universityofcalifornia.edu/finreports/index.php?file=08-09/pdf/fullreport_09.pdf

The next page shows the UC Irvine "Facts in Brief" extracted from Page 117 of the above document for the 2008-2009 academic and fiscal year.

UCI	CAMPUS	FACTS	
STUDENTS			
Undergraduate	fall	enrollment	22,238
Graduate	fall	enrollment	5,393
Total	fall	enrollment	27,631
University	Extension	enrollment	25,664
DEGREES CONFERRED 2007-2008			
Bachelor			5,209
Advanced			1,404
Cumulative	SINCE 1965		129,002
FACULTY AND STAFF			
LIBRARY	VOLUMES	(as of June 2008)	2,622,259
CAMPUS	LAND AREA	(in acres)	1,474
FINANCIAL FACTS IN \$THOUSANDS			
OPERATING EXPENSES		BY FUNCTION	
Instruction			446,395
Research			226,178
Public	service		11,349
Academic	support		125,854
Student	services		58,543
Institutional	support		44,805
Operation	& maintenance	of plant	38,053
Student	financial	aid	64,346
Medical	centers		498,903
Auxiliary	enterprises		116,385
Depreciation	&	amortization	116,691
Other			6,312
Total	(\$thousands)		1,753,814
GRANTS AND CONTRACTS REVENUE			
Federal	government		219,802
State	government		50,818
Local	government		5,025
Private			57,611
Total	(\$thousands)		333,256
UNIVERSITY ENDOWMENTS			
Endowments	(\$thousands)		45,167
Annual	income	distribution	2,738
CAMPUS FOUNDATIONS' ENDOWMENTS			
Endowments	(\$thousands)		161,314
CAPITAL ASSETS (\$thousands)			
Capital	assets,	at net book	2,406,782
Capital	expenditures		415,525

2. Pursuant to 10 CFR 50.33(f)(2), the regulation states that "the applicant shall submit estimates for total annual operating costs for each of the first five years of operations of the facility." Since the information provided in the 1999 application submittal is out of date, please provide the following additional information:

(a) The estimated operating costs for the UCINRF for each of the fiscal years (FY)11 thru FY15 (the first five-year period after the projected license renewal date).

Future operating costs are estimated based on past practice over several years. These practices are expected to continue. There is currently no permanent assigned salary budget for the facility. The figures given below are for "other" costs as described below

Administration of the reactor is the responsibility of teaching faculty paid from University of California instructional funds, with some teaching relief (20-30% time). Instructional funds derive from a state budget allotment to the Regents of the University of California based on enrollment, and include all benefits. Graduate assistants, who may be operators, are employed as research assistants on grants or teaching assistants in courses and operate the reactor as part of those responsibilities. Such Assistantships pay all benefits and student fees. The dollar value of these assignments (faculty or students) varies with the salary level of the assigned individual. Radiological Safety oversight is provided by the UCI Environmental, Health and Safety Office at no direct charge to the facility. Emergency and security response is likewise made at no charge (including training) by UCI EH&S, UCIPD, and Orange County Fire Authority units.

All other costs – supplies, maintenance, surveillance, including casual (student) labor, and costs of specialized health physics assistance (e.g., shipping radioisotopes), and fiscal support (billing and accounting) is provided for by external and internal charges for facility use. The reactor operates as a UC standard recharge facility (and charge rates per hour of reactor and/or other facility equipment use have been established for all users. The projection assumes a 3% per annum inflation factor over the 2009-2010 estimate of expenses. However, the recharge system allows for annual review of charges which can be adjusted to meet actual or projected changes in costs of operation. UCI recharge policy may be examined at <http://www.policies.uci.edu/adm/procs/700/703-13g.html>

2010-2011	\$15,000
2011-2012	\$15,450
2012-2013	\$15,914
2013-2014	\$16,391
2014-2015	\$16,883

(b) Confirm that UCI's primary source of funding to cover the operating costs for the above fiscal years will be from the state-funded budget as described in the application.

The sources of funds have been delineated above. They include state-funded budget and recovery of costs from a variety of other sources.

3. The application states that "A revised estimate of costs, adjusted for inflation, is \$1.0 M anticipated, based on estimates of increased waste disposal prices." In order for the NRC staff to complete its review of the decommissioning cost estimate, please provide the following information:

(a) A current decommissioning cost estimate (2010 dollars) for the UCINRF to meet the NRC's radiological release criteria for decommissioning the facility for unrestricted use pursuant to 10 CFR 50.75(d)(2). Provide the basis for how the cost estimate was developed, showing costs, in current dollar amounts, specifically broken down into the categories of labor, waste disposal, other items (such as energy, equipment, and supplies), and a contingency factor of at least 25 percent.

The cost estimate, in 2010 dollars, for decommissioning the UCI facility is \$2M dollars.

Basis:

The University of Arizona recently (May, 2009) contracted with Enercon Services, Inc., to prepare a decommissioning plan for the University of Arizona (UA) TRIGA reactor. The total cost estimate, including 25% contingency was \$1,990,686 (page 12).

The cost breakdown provided is included as Table 1.1 below. This breaks down costs by tasks, and does not completely separate labor and other costs. For the purpose of simplified projection, it is assumed that labor is 50% of the total cost.

Table 1-1. Decommissioning Cost Estimate

Major Project Activities	Cost
Preparation and approval of plans and procedures	\$ 113,987
Site mobilization and training	\$ 47,604
Facility preparation (hoist, waste handling logistics, etc.)	\$ 109,757
Perform supplementary characterization	\$ 9,428
Reactor bridge and control rod drive removal	\$ 44,578
Remove cooling coils, fuel storage holsters, and fuel storage rack	\$ 53,493
Reactor component removal including control rods, ion chambers, fission chambers, grid plates, reflector, rabbit piping, rotary specimen rack, irradiation tubes, thermalizer block, core support platform	\$ 136,643
Pool water removal, cleanup, and disposition	\$ 51,352
Remove granite liner, concrete tank, outer steel and soil	\$ 263,358
Remove auxiliary systems	\$ 46,033
Storage pits decontamination or removal	\$ 47,488
Facility decontamination	\$ 18,850
Source(s) packaging, transportation, and disposal	\$ 63,599
Radiological waste packaging, transportation and disposal	\$ 312,624
Final status surveys and report	\$ 54,727
Facility restoration (backfill, pour slab, and miscellaneous)	\$ 29,395
Demobilization	\$ 40,085
University oversight	\$ 122,000
Estimated Decommissioning Cost	\$ 1,592,549
Contingency @ 25%	\$ 398,137
Total Decommissioning Cost with Contingency	\$ 1,990,686

Addendum 1 provides a comparison of the UCI facility with the UA facility as justification for the appropriateness of this estimate for the UCI facility.

(b) State the decommissioning method to be used (e.g., DECON, or other method).

While the UA plan calls for complete DECON of the facility for unrestricted use it is likely that UCI will continue to utilize the laboratory space in the physical sciences building for alternative radiation/radiochemistry research purposes for the foreseeable future. In which event, the immediate reactor structures, including the fuel, control rods, reflectors, rotating rack, neutron detectors and in-core experimental facilities, would be removed and disposed, but removal of activated concrete and aluminum tank liner would be delayed so substantial decay of these may have occurred, reducing the volume/weight that must be removed and disposed. Fill and/or alternative physical science or engineering experimental equipment would be installed in the tank under appropriate monitoring. This is a variation to the SAFSTOR method and overall cost

would be substantially reduced by removing only the more severely contaminated materials and entombing remaining low level materials. Ongoing health physics surveillance would be carried out as part of the normal survey by UCI Office of Environmental Health and Safety (EH&S) of laboratories utilizing radiation or radioactivity. Any level above background levels would be cause for monitoring of any personnel using the space. This cost, as well, would be met, as now, as part of the ongoing budget of EH&S.

(c) A description of the means of adjusting the cost estimate for the UCINRF periodically over the life of the facility (e.g., Consumer Price Indices, U.S. Bureau of Labor Statistics Indices, etc.) pursuant to 10 CFR 50.75(d)(2).

UCI will adjust appropriate estimates using best available information. At this time it is unlikely that models based on trend data before 2007-8 will accurately predict (in a recession/post recession environment) the trends for future use. The university uses figures for short-term (usually up to 5 years) inflation agreed with federal granting agencies and these would be employed for subsequent updates. UCI's policy establishing escalation rates for use in federal or other grant proposals may be examined at

<http://www.research.uci.edu/ora/sp/preparingbudgets.htm#Escalation>

(d) A numerical example showing how the 2010 decommissioning cost estimate will be updated periodically in the future.

Currently, all grant submissions from UCI for federal support are using a 2% per annum salary inflation and 3% per annum inflation for other costs (see above). Examination of the UA decommissioning plan suggests an approximate breakdown of 50% salary, 50% other costs. The average of 3% and 2% is 2.5% applied over the total estimate assumed to be in 2010 dollars. Based on this an estimate of $\$2M + (\$2M \times 2.5\%/year \times 20 \text{ years}) = \$3M$ would be made for 2030 decommissioning at the end of the 20 year license period. As mentioned, the size of the waste volume to be disposed could be reduced by using a variant of SAFSTOR rather than DECON to allow for any unexpected, dramatic increases in solid low level waste disposal prices.

4. The application includes a statement of intent (SOI) as the method to obtain decommissioning funding when necessary to decommission the facility. Where the applicant intends to use a SOI as the method to provide decommissioning funding assurance, as provided for by 10 CFR 50.75(e)(1)(iv), the staff must find that the applicant "...is a Federal, State, or local government licensee..." To make this finding, the applicant must state that it is a State government organization and that the decommissioning funding obligations of the applicant are backed by the State government, and also provide corroborating documentation. Further, the applicant must provide documentation verifying that the signator of the statement of intent is authorized to execute said document that binds the applicant. This document may be a governing body resolution, management directives, or other form that provides an equivalent level of assurance. As the application does not include all of the above information, please submit the following:

(a) An updated SOI, which includes: the date of submittal of the SOI; the current cost (2010 dollars) estimate for decommissioning; a statement that funds for decommissioning will be obtained when necessary; typed name and title of the signator, and original signature of the signator; and the signator's oath or affirmation attesting to the information.

This document is being sent under separate cover.

(b) Documentation that corroborates the statement in the application that UCI is State agency and a State of California government licensee under 10 CFR 50.75(e)(2)(iv).

The following is taken directly from the on-line searchable version of the Constitution of the State of California at <http://www.leginfo.ca.gov/const.html> which delineates, in Article 9, Section 9., the status of the University of California as a state Public Trust, the composition of its Board of Regents, and the powers that they hold.

CALIFORNIA CONSTITUTION
ARTICLE 9 EDUCATION

SEC. 9. (a) The University of California shall constitute a public trust, to be administered by the existing corporation known as "The Regents of the University of California," with full powers of organization and government, subject only to such legislative control as may be necessary to insure the security of its funds and compliance with the terms of the endowments of the university and such competitive bidding procedures as may be made applicable to the university by statute for the letting of construction contracts, sales of real property, and purchasing of materials, goods, and services. Said corporation shall be in form a board composed of seven ex officio members, which shall be: the Governor, the Lieutenant Governor, the Speaker of the Assembly, the Superintendent of Public Instruction, the president and the vice president of the alumni association of the university and the acting president of the university, and 18 appointive members appointed by the Governor and approved by the Senate, a majority of the membership concurring; provided, however that the present appointive members shall hold office until the expiration of their present terms.

ADDENDUM

Comparison of University of Arizona (UA) and UCI Reactor Facilities.

A. Major Similarities

Item	UA	UCI
fuel	20% ss clad standard - hydrided	same
pool	Below ground at floor level of building	same
Pool water	Minimal contamination (gamma/beta)	same
Control rods	2 standard, 1 transient, boron carbide	2 standard 2 transient, boron carbide
Reflector	Graphite, sealed in aluminum with rotating specimen rack embedded	Same
Sample transfer system	"standard" GA provided, and fast Cd lined	same
Bridge and deck plates	steel and aluminum grids across pool (6 feet)	similar, across one section of pool (10 feet)
Storage pits (dry)	6 steel/concrete	5 steel/concrete never used for spent fuel
Operations	Minimal schedules	Minimal schedule
Room and associated lab facilities	Minimal contamination – no known spills or leaks	same

B. Major Differences

Item	UA	UCI
Fuel elements	71 (87 on hand)	82 (103 on hand)
pool	5000 gallons, 6 feet diameter, 21 feet deep	25,000 gallons, oval 10 feet by 15 feet, 25 feet deep
Tank liner	Steel	Aluminum alloy
Reflector and beam tube	Graphite block and vertical tube	none
Cooling	Convection only, freon based coils in tank	Convection only, external heat exchanger using water
SNM non-fuel	Substantial holdings (ca. 3 kg)	None except AmBe source to be retained on state license
Operations	243 Mwh total	1,470 Mwh to March 2010.

Note: On balance, these two facilities are extremely similar. Although the higher power level and considerable operational program in the 1970's resulted in a significantly higher operation total at UCI, the larger pool and tank, with the absence of cooling coils and aluminum instead of steel liner, means comparable activation (closest distance of tank liner to core at UA is about 1 ft, while at UCI is 2-1/2 ft.) is anticipated with comparable material removal required. The 25% overall contingency factor included in the UA cost estimate should more than compensate for any differences.