

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 50-142
THE REGENTS OF THE UNIVERSITY	)	(Proposed Renewal of Facility
OF CALIFORNIA	)	License Number R-71)
	)	
(UCLA Research Reactor)	)	June 30, 1983
	)	

UNIVERSITY'S REPLY TO CBG'S PROPOSED  
FINDINGS OF FACT AND CONCLUSIONS OF LAW  
(Concerning Hearing on Contention II)

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## I. INTRODUCTION

According to the briefing schedule established by the Alternate Board Member in the special proceeding on Contention II, the parties were given until June 30, 1983 to reply to the previously filed proposed findings of fact and conclusions of law of the other parties. University chooses to reply only to CBG's proposed findings of fact and conclusions of law.

As demonstrated below a significant number of CBG's proposed findings of fact are not supported by the evidentiary record in this proceeding. As a consequence, the conclusions based on those facts cannot stand.

As an initial matter, University takes exception to CBG's attempt to resurrect a two-year old discovery dispute under the guise of a discussion of the procedural history of Contention II.<sup>1/</sup> Ms. Thompson's "history" is intended to insinuate that University had denied that the facility was being used by a "commercial" user. The record shows otherwise; "commercial use"

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<sup>1/</sup> The dispute culminated in the May 29, 1981 show cause order of former Board Chairman Elizabeth Bowers which was prompted by Mr. Glenn Woods' letter of May 1, 1981. Acting in good faith, Mr. Woods, co-counsel for University, had written to CBG to state that University did not understand the Board's March 10, 1981 Order as requiring that University submit further written answers to four of CBG's interrogatories which had been the subject of a previous CBG motion to compel which was granted and in response to which the University had already submitted a set of "further written answers." Mr. Woods' letter interpreted the March 10 Order as requiring the University to produce its business and accounting records for CBG's examination. University acknowledged responsibility for failure to seek clarification of the March 10 Order.

was routinely reported to the Commission months before CBG was admitted to the proceedings. Ms. Thompson's discussion is inaccurate but, more to the point, it is irrelevant to a resolution of the evidentiary matters considered at the special proceeding on Contention II.

## II. THE SUBSTANCE OF CBG'S CASE

### A. CBG's Basic Assertion that the UCLA Reactor Facility is in Competition with Commercial Facilities is Unsupported.

In discussing the legal standards for class 104 licenses CBG referred to Congress' expressed intent that class 104c facilities not be used substantially for commercial purposes. CBG explained that a major reason why Congress adopted this "substantial use" test was

" . . . that other commercial and industrial reactors should not be subjected to the unfair competition from reactors in similar use but favored by the regulatory benefits for class 104 license (sic). . . "

CBG's Proposed Findings of Fact and Conclusions of Law, at 11.

CBG's witnesses alleged that UCLA was competing with commercial facilities, however, except for one San Diego firm CBG did not attempt to identify any such commercial facilities. The one "commercial" firm in San Diego was GA Technologies, Inc., which was identified by CBG's Exhibit C-32 (letter of W. L. Whittemore, Manager, TRIGA Facility, GA Technologies, Inc. to Mr. Steven Aftergood, February 18, 1983). The letter was received in evidence. Tr. 598-603.

University introduced evidence that that facility was not in competition with UCLA's facility for the business of Dr. Kalil because of the unique arrangement that Dr. Kalil had at the UCLA reactor facility. Notwithstanding that, the Alternate Board Member is asked to take official notice of the Commission's licensing records that the GA Technologies, Inc., TRIGA Facility is licensed as a class 104c facility and is therefore not a commercial facility with which the UCLA facility can be said to be in competition.

CBG's legal arguments concede that the element of competition is critical to a finding of "substantial commercial" activity as intended by Congress. Moreover, it is clear that CBG has the burden of going forward with respect to this issue raised by its contention. CBG's failure to identify a class 103 "commercial" facility that reasonably can be said to be in direct competition with the UCLA reactor facility is a failure of proof on an issue fundamental to the basic claim being made by CBG that UCLA is engaged in substantial commercial activity.

B. The Testimony of Mr. Hirsch and Mr. Aftergood Concerning the Interpretation of University's Records is Entitled to Little Weight.

The testimony of Mr. Hirsch and Mr. Aftergood consisted largely of opinions and inferences drawn from their "review" of matters reported in University's records and documents. For the most part the opinions testified to were not based on the personal knowledge of the witnesses. To that extent, the testimony is not permissible lay opinion evidence. Three basic problems arise with that testimony.

(1) The written testimony of these witnesses was largely concerned with the claim that the original purposes for which the reactor was licensed were no longer a substantial portion of the use of the reactor. Written testimony, Tr. 485ff, par. 4-13; CBG's proposed Finding of Fact No. 76. Specifically, CBG claimed that instructional use of the reactor had markedly declined and that research had become "non-existent."

However, with respect to instructional use, CBG failed to produce any credible evidence as to specific class offerings in the earlier years of reactor operations. The only credible information as to class offerings was that submitted by University's witnesses for classes offered in the current period. CBG's witnesses provided no data summaries, compilations or records relating to class use. Tr. 512-514. The witnesses' conclusions were apparently based on an unexplained remark in a 1962 AEC inspection report that the "operating use factor" was 87% and a supposed tabulation of megawatt hours that was never produced. Tr. 508-511, 520-522. These witnesses did not explain how their evidence as to overall use was to be probative on the question of the relative uses for class, research or even "commercial" use. The opinions and inferences of CBG's witnesses on the pattern of class use of the reactor over the years is not credible. CBG finding no. 76 is not supported by the evidence.

(2) The testimony of CBG's witnesses that research use of the reactor has become non-existent is based on their absurd claim that only "reactor physics" type research falls within the license purpose. Written testimony, par. 6. Mr. Hirsch testified that the reactor license was

originally given to the School of Engineering and Applied Science and that only "engineering research" is permitted under the existing license.

Tr. 579. Relying on this argument CBG's witnesses conclude that all "sales of (reactor) services" to UCLA's geologists, geochemists, and other student and academic researchers outside the School of Engineering and to similar researchers at the other colleges and universities in the southern California area are "sales of services, other than research and development or education or training." Written testimony, par. 11-14, 16, and chart on page 4; Tr. 545, 579, 581.

By so excluding genuine research activity of the University and looking only to the formal class instruction hours, measured in "port-hours", CBG's witnesses derive their various calculations that University devotes 98% of its costs to an activity that represents only about 10% of reactor use. Written testimony, par. 11, 16-17, chart on page 4.

It is a matter of record that the Regents of the University of California is the license holder and that the original, current and proposed license purpose contemplates the support of education and research generally and is not limited to the School of Engineering nor just to UCLA. There is no merit to CBG's extreme position on sales of services. Even CBG's accountant witness, Mr. Baefsky, could not agree to so extreme a position. Tr. 659, 661-662.

(3) Mr. Hirsch and Mr. Aftergood testified that according to their review of the supervisor's logs there were substantial discrepancies between

the actual hours in which the reactor was operated for class instruction and the information reported in University's Table of Class Use of the Reactor. Applicant's Exhibit 6. Tr. 486-492, 552-560.

On rebuttal, Mr. Ashbaugh testified that CBG's witnesses had made mistakes in interpreting the information contained in University's records in attempting to verify the data in the Table of Class Use. Tr. 730. Mr. Ashbaugh demonstrated the mistakes that were made in relying on the reactor supervisor's logs instead of the operating log. Mr. Ashbaugh pointed out that the basic facility record is the operating log and that the supervisor's log is the personal record of the supervisor used by him to facilitate billing the various reactor users. Tr. 740. Mr. Ashbaugh's demonstration made it clear that the data recorded in the operating log and the supervisor's log can only be interpreted reliably by someone familiar with how the entries are made. More specifically, Mr. Ashbaugh testified that only the operating log, and not the supervisor's log, can be used to extract "reactor academic hours" as used on the Class Use Table as a measure of reactor operation supporting class instruction. Tr. 740-760. The testimony of CBG's witnesses on reactor operating hours related to class use was based largely on a review of the supervisor's logs. CBG's testimony in the form of opinions and inferences supposedly drawn from University's operating records is not credible.

### III. CBG'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

CBG's proposed findings of fact cited in support of its several conclusions include numerous statements that are not supported by the evidentiary record.

A. Issue No. 1: The extent to which the UCLA Argonaut UTR is issued as a tool to support education and research programs when it is not operating.

The following CBG proposed findings are not supported by the record:

(1) CBG asserts in its conclusion that "no research projects of any kind" which are reactor related are being conducted at the NEL. Page 39, citing CBG finding no. 27. Mr. Ostrander's testimony was clear that, although the reactor was no longer used for basic reactor physics research, the reactor supports a number of research projects in geophysics, geochemistry and meteorology and other fields outside of nuclear engineering, both at UCLA and at other institutions in the southern California area. Tr. 14-16, 19. CBG finding no. 27 also misstates Mr. Ashbaugh's testimony that the last time a beam port was used by a student researcher was 1970. Tr. 406.

(2) The statement that class use of the reactor is minimal, "approximately one hour every two weeks for classroom use" (page 39, relying on finding no. 37) is simply false. Mr. Ashbaugh's testimony, cited by CBG, was concerned only with a single class, Engineering 139A. Tr. 296-299.

(3) CBG's finding no. 52 and its assertion that "the reactor in fact need not physically be in existence" for classroom learning to take place (page 39) distorts the testimony of University's witnesses. The courses described by Mr. Ashbaugh as currently being offered are dependent on the reactor. Tr. 288-310. Mr. Ashbaugh testified that Engineering 135F is a reactor operator training course and the classroom learning would obviously be pointless without the existence of the reactor; Engineering 135AL and BL are two laboratory courses in nuclear analysis that include a number of experiments that require use of the reactor (thermal diffusion in graphite, sub-critical neutron multiplication, thermal neutron flux profile, control rod and reactor kinetics experiments, etc.); Engineering 139A, a required course in the Chemical, Nuclear and Thermal Engineering (CNTE) department, includes reactor-related experiments (instrument calibration and identification of unknown substances through reactor activation analysis); the courses in Chemistry, Physics, and Earth and Space Sciences are all neutron activation analysis courses which clearly depend on the existence of the reactor. Tr. 289-291, 293, 295.

(4) CBG's finding no. 51 is misleading in implying that the 40 to 80 percent of the operator trainee's console time that occurs "at-power" is recorded as educational port-hours, citing Tr. 343. Page 40. As Mr. Ashbaugh explained, reactor operator training hours (beyond the formal class instruction console hours) are not logged nor recorded. Tr. 343. The reactor runs are recorded according to the ultimate user (whether UCLA, other college, or non-academic user) and not according to whether a student operating the controls is getting training. The hours the student reactor operators are at the controls getting training experience are not included in, for example, Applicant's Exhibit 1 under "Engineering Classes." Tr. 164, 323-324, 328-330, 344.

(5) CBG also asserts that if "peripheral time" were added for educational uses, such peripheral time would have to be added for commercial uses and the percentages would remain constant. Page 41, findings nos. 54 and 62. CBG is mistaken. The only purpose for defining reactor-dependent time is to better describe the education benefits which flow from the reactor. The term does not apply to non-academic users. However, if such a comparison were attempted, the percentages would not remain the same. The commercial user has no occasion to participate in reactor console instruction, nor in any class instruction, lecture, preparation or laboratory analysis instruction such as students participate in. Moreover, the commercial user does not participate in reactor systems nor health physics instruction. Tr. 18, 79, 288-307, 328-330, 346, 323-324, 371.

(6) Concerning CBG's finding no. 55, Mr. Ashbaugh did not compare the class instruction port-hours for 1979 with the 1981-82 reactor dependent hours from the Class Use Table. Tr. 371-372.

(7) CBG's finding no. 63 is based on a hypothetical situation of a commercial user working 60 hours a week for 50 weeks a year in reactor-dependent laboratory analysis. There was no testimony or other evidence that Dr. Kalil was working or had worked 50 weeks a year at 60 hours a week in "reactor-dependent" activities. Tr. 393.

(8) CBG's finding no. 82 is incorrect. The purpose of the reactor facility is to support education, which includes formal classroom instruction as well as the research efforts of principal investigators and student researchers. CBG's assertion that the "sole" purpose is one-tenth of the

reactor operation is based on its own calculation that treats all research efforts as a sale of services, other than research and development or education or training and hence the same as commercial activity. Written testimony of Aftergood and Hirsch, par. 17, chart on page 4.

(9) CBG's finding no. 85 is incorrect. For example, Mr. Ostrander testified that the health physicist makes entries in the operating log that are unrelated to reactor operation. Tr. 24.

(10) CBG's finding no. 90 asserts that the reactor can be used as a simulator without operation. However, it may reasonably be inferred that a reactor that is not operating simulates nothing unless it is designed to be a simulator. In any case, the matter is irrelevant. UCLA does not have such a simulator and a simulator is not very useful for conducting activation analyses.

(11) CBG asserts that University has kept no records that reflect an actual lecture in which the reactor was utilized. Finding no. 97. That statement is false. As Mr. Ashbaugh demonstrated both the supervisor's logs and the operating logs contain notations of the classes that were taught using the reactor which includes lecture time at the reactor console. Tr. 730, 740-760.

(12) CBG asserts that University has kept no records that reflect a measure of usage for classroom instruction other than the port hours. Finding no. 98. This statement is misleading. As University's witnesses testified, the assignment of a port-hour to a class instruction hour is entirely arbitrary. Tr. 27, 28, 30, 33, 35, 318-319, 367-368. Mr. Ashbaugh

demonstrated that console hours can be readily ascertained from the operating log. Tr. 730, 740-760.

University's proposed findings of fact relevant to this issue no. 1 include the following: nos. 1, 2, 3, 4, 7, 9, 10, 12, 13, 16, 17, 24, 27, 28, 29 and 39.

B. Issue No. 2: The meaning of the term "port-hours".

In addition to findings nos. 51, 52, 54, 55, 62 and 85 discussed above, the following proposed findings are not supported by the record:

(1) CBG's finding no. 30 asserts that the dominant commercial user admitted that only about 5 or 10 user hours were involved in student instruction, citing Tr. 226. The statement is false. Dr. Kalil, the only "commercial" user of the facility clearly stated that he provides "very in-depth" training to the students who are to use his sample analysis equipment. Tr. 216. He further stated that he spends a "minimum of ten hours per student, often stretching out to 40 hours per student." Tr. 224. This instruction time is spent in sample preparation, sample analysis, data reduction and interpretation and other informal guidance on the student's research. Tr. 225. He stated that this time "does not show anyplace." Tr. 226. The "five or ten" hours referred to by Dr. Kalil represents only the actual sample irradiation time done for such students that would, according to Dr. Kalil, probably be charged as non-academic port-hours on Applicant's Exhibit 2. Tr. 226-227.

(2) CBG's finding no. 58 is misleading. Mr. Ashbaugh testified that "reactor academic hours/qtr" on Applicant's Exhibit 6 comprises two situations: when students are receiving instruction while at the reactor console during actual reactor operation, the time is measured in console hours; but, when the reactor is used to irradiate samples for further laboratory analysis by students who are not present at the reactor console, the sample irradiation time is measured in hours "at-power." Tr. 374, 378.

(3) CBG's findings nos. 84, 89, 93, 94, 95 and 98 are all misleading in asserting that University's records only measure use of the reactor in "port-hours" and that University has no records that would permit measuring usage in other than port-hours. In fact, the basic record that is kept of reactor operations is the operating log which records operating hours "at-power." Tr. 23, 25. The operating log also records the time of the pre-start check-off to final shutdown of the reactor. Tr. 23, 320, 329-330, 364. "Port-hours" is a measure of use derived by the reactor supervisor in his logs (as some multiple of at-power hours) for the purpose of billing the various users of irradiation services. Tr. 27-28, 30, 33, 35 740. From the operating log entries several other measures of reactor "use" can be derived. Equivalent full power hours measures cumulative energy generation and the burnup of the fuel. Tr. 26-27, Applicant's Exhibit 1. Actual run time has also been recorded and is measured from the time the reactor reaches criticality. Tr. 32, Applicant's Exhibit 1. Actual run time will exceed equivalent full power hours because it accounts for the time the reactor is critical but not "at-power." Port-hours will exceed both actual run time and equivalent full power hours because of

multiple uses where three port-hours can be recorded for one operating hour. Tr. 33-34. University's Table of Class Use (Applicant's Exhibit 6) approximates "reactor academic hours/qtr." measured as reactor console hours which begin with the time the control blades are engaged for reactor classes that receive instruction at the console or as irradiation hours which are simply operating hours at-power for classes that do not include instruction at the console. Tr. 318-319, 367-368, 740-760. Mr. Ashbaugh testified that although console hours were not recorded in the supervisor's log, they could be derived directly from the operating log. Tr. 740-760.

(4) Contrary to CBG finding no. 96, an hour of education is not defined as one port hour per hour of education. Mr. Ostrander explained that representing one "at-power" hour of classroom instruction as one port hour of use was a convenient but arbitrary way of attempting to display the various reactor activities on one chart in terms of a single unit. Tr. 27, 28, 30, 33, 35, 364-365. An hour of class instruction could have been reported at 3 or 4 port-hours under the rationale that the use of all of the irradiation ports is pre-empted when the reactor is used for a class. Tr. 30-35.

University's proposed findings of fact relevant to this issue no. 2 include the following: nos. 5, 8, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30.

- C. Issue No. 3: The extent to which UCLA facility and staff salaries charged against reactor operating costs would be avoided if the reactor were not present.

CBG's finding no. 37 is discussed above.

University's witnesses testified that if the non-academic or commercial user of the reactor was eliminated, there would be no change in the permanent staff at the facility and the impact on the cost of facility operations would be very small. Tr. 57-60, Applicant's Exhibit 4. If the educational users of the reactor were eliminated, the reason for the existence of the facility would vanish. Tr. 69-70. In that situation it could reasonably be inferred that the staff would be discharged or reassigned elsewhere.

University's proposed findings of fact relevant to issue no. 3 include the following: nos. 31, 32, 33, and 34.

- D. Issue No. 4: The categorization of reactor usage and allocation of usage time to each category.

In addition to CBG's findings nos. 27, 30, 37, 62, 63, 97, 98, the following proposed findings are not supported by the record:

(1) CBG's finding no. 9 asserts that a comparable commercial laboratory charges a much higher fee than UCLA's fee, citing CBG's Exhibit 32 which identifies the GA Technologies, Inc., TRIGA Facility. Official notice can be taken of the Commission's docketing records that the GA Technologies, Inc., TRIGA Facility is licensed as a class 104c facility and hence is not a "commercial" facility within the intent of the Commission's regulations.

(2) CBG's finding no. 21 asserts that University allocates 98% of its costs of operation to an activity (classroom instruction) that represents about 10% of the operational hours. The assertion is false. University's costs are devoted to education, which includes both formal classroom instruction and the research of principal investigators and student researchers.

Therefore, in the first place, even in the year 1980 when non-academic port-hour usage was at its highest, the "educational" usage, measured as CBG prefers, in port-hours was much greater than 10%. Moreover, the "port-hours" reported for class instruction on Applicant's Exhibit 1 should be multiplied by three to make the comparison with non-academic (commercial) port-hours more equitable. More importantly, in the years prior to 1978 essentially all the costs of operation were properly allocable to educational purposes. Applicant's Exhibits 1 and 2. Also, in the years 1978, 1981 and 1982 the majority of port hours represented educational use and even under CBG's proposed allocation method, the majority of costs would be allocated to educational use. It is only the years 1979 and 1980 that raise questions of substantial commercial activity under CBG's allocation scheme (ignoring CBG's claim that research by UCLA and other university researchers should be regarded as commercial). But when actual cost impacts are considered it is clear that allocating costs on the basis of port-hours leads to an absurdity. In 1979-80 non-academic use increased by a magnitude of over 200 and by 1982 it had decreased by a factor of 3. Yet actual costs were "steady-state" during this period and the only identifiable impact on operations was an incidental increase in total utility costs and

student reactor operator wages. The testimony of Mr. Ostrander that the facility has operated with a fixed staffing level and that there would be no changes in the major cost elements if non-academic use of the reactor was eliminated is uncontroverted. Tr. 58, 60, 63-69. A cost allocation formula unrelated to the way in which actual costs are incurred is not defensible.

(3) CBG's finding no. 29 is misleading. Mr. Ostrander's testimony was that it was very likely that if a student reactor operator was undergoing class training, not just picking up experience hours, simultaneous with a service irradiation, port hours would be recorded for both uses. Tr. 173-174.

(4) Contrary to CBG's finding no. 31, Dr. Kalil testified that there would be no purpose for him to be in business if he was simply to mail out irradiation samples to other facilities since his business involves "real-time analysis", the analysis is done while the reactor is running. Tr. 278-279.

(5) There is absolutely no support for CBG's finding no. 34 at the cited testimony, Kalil, Tr. 256.

(6) CBG finding no. 79 is effectively rebutted by the data represented in Applicant's Exhibits 1 and 2. There is no statistically relevant evidence that the growth in non-academic port-hours in the years 1979-1980 displaced any of the other uses of the reactor.

(7) CBG finding no. 76 is discussed in Section II.B.(1) of this pleading.

(8) CBG finding no. 88 is a legal conclusion that has no merit and is somewhat short on logic.

University's proposed findings of fact relevant to issue no. 4 include the following: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19-22, 24-39.

E. Issue No. 5: The extent to which the reactor is used to support teaching and/or research programs of other educational institutions.

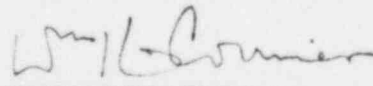
University's proposed findings of fact relevant to issue no. 5 include the following: 4, 5, 6, 7, 8, 9, 12.

#### IV. CONCLUSION

In consideration of the foregoing and University's Proposed Findings of Fact and Conclusions of Law, dated June 23, 1983, University respectfully requests that the Alternate Board Member recommend that University's findings of fact and conclusions of law be adopted by the Atomic Safety and Licensing Board respecting the initial decision on Contention II in this proceeding.

Dated: June 30, 1983.

DONALD L. REIDHAAR  
GLENN R. WOODS  
CHRISTINE HELWICK

By   
WILLIAM H. CORMIER  
Representing UCLA

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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(UCLA Research Reactor)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the attached: UNIVERSITY'S REPLY TO CBG'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW (Concerning Hearing on Contention II), UNIVERSITY'S MOTION TO REOPEN SPECIAL PROCEEDINGS. in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, postage prepaid, addressed as indicated, on this date: June 30, 1983.

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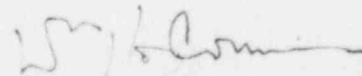
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