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December 30, 1983

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF SECRETARY  
HEATING & SERVICE  
BRANCH

In the Matter of

THE REGENTS OF THE UNIVERSITY  
OF CALIFORNIA

(UCLA Research Reactor)

Docket No. 50-142

(Proposed Renewal of  
Facility License)

CBC'S RESPONSE TO THE BOARD'S NOVEMBER 30, 1983, MEMORANDUM AND ORDER

Do Sales of Irradiation Services by UCLA to Uranium West, Inc., Constitute  
Research as Defined in the Atomic Energy Act?

Contention II ("Wrong Class of License") asserts that the UCLA reactor is used only one to two hours per week for its licensed purposes of education and research and that the vast majority of its actual use is sale of services, primarily to an ore assaying company known as Uranium West. By Memorandum and Order of November 30, 1983, the Board directed the parties to address the question whether sale of irradiation services by UCLA to Uranium West constitutes "...research...activities of the types specified in section 31..." of the Atomic Energy Act. The Board particularly directed the attention of the parties to §31(a)(4) of the Act.

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1           §31 of the Atomic Energy Act, and the definitions related thereto  
2 found in §11, do not indicate that the licensee's sale of services to  
3 Uranium West constitutes research as provided for in the Act, but just  
4 the contrary. The activity is commercial, of the form requiring a Class 103  
5 license.

6           The reason is principally that the activities described in  
7 §31(a)(4) are fields into which research is to be encouraged, but commercial  
8 activity in those fields is, of course, commercial activity, not research.  
9 The subparts of 31(a) are controlled by 31(a) itself, which describes the  
10 subparts as fields into which research and development are permitted.  
11 The subparts do not define research; that is done in §11.x., by which  
12 definition UCLA's sale of services to Uranium West is clearly not research.

#### 13                               Discussion

14           This contention essentially raises the issue whether the UCLA  
15 reactor--about which so much uncertainty remains as to its safety--is even  
16 used any more for the purposes for which the license was granted. It  
17 contends that research has dried up and instructional uses are a mere 30-50  
18 hours per year, with hundreds of the remaining hours per year devoted to  
19 sale of services, primarily to Uranium West. Therefore, CEG contends, if  
20 the reactor is to be licensed at all (which, in Contention X, CEG asserts  
21 isn't worth the risks, given the extremely minimal benefits involved,  
22 primarily to this ore company), it must be licensed under 10 CFR 50.22  
23 because more than 50% of its use is no longer for the original licensed  
24 purposes.

25           10 CFR 50.21(c), the provision applicable for reactors which are  
26 genuinely research reactors, defines them as:  
27  
28

1 "A production or utilization facility, which is useful in  
2 the conduct of research and development activities of the  
3 types specified in section 31 of the Act, and which is  
4 not a facility of the type specified in paragraph (b) of  
5 this section or in 50.22." (emphasis added)

6 50.22, of course, provides the now-famous "substantial use" test mandated  
7 by Congress for research reactors used substantially for sale of services:

8 "...in the case of a production or utilization facility  
9 which is useful in the conduct of research and development  
10 activities of the types specified in section 31 of the Act,  
11 such facility is deemed to be for industrial or commercial  
12 purposes if the facility is to be used so that more than  
13 50 percent of the annual cost of owning and operating the  
14 facility is devoted to the production of materials, products,  
15 or energy for sale or commercial distribution, or to the  
16 sale of services, other than research and development or  
17 education or training."

18 The Board asks whether 50.21 might apply to UCLA if Uranium West's  
19 business could be construed to fit under section 31(a)(4) of the Act.<sup>1/</sup>  
20 CBG's answer is no--Uranium West's use of the UCLA reactor does not fit  
21 under 31(a)(4), and even if it did, the UCLA reactor would still not meet  
22 the second requirement of 10 CFR 50.21(c), which is that 50.22 not apply.

23 The Subparts of 31(a) Describe Fields into which Research Can Be Conducted--  
24 They Do Not Define Research

25 Section 31(a) of the Atomic Energy Act states in pertinent part:

26 "The Commission is directed to exercise its powers in such  
27 manner as to insure the continued conduct of research and  
28 development and training activities in the fields specified below..."

Below are listed six fields, such as "nuclear processes", "the theory and  
production of atomic energy," and "utilization of special nuclear material,  
atomic energy, and radioactive material for medical, biological, agricultural,  
health, or military purposes".

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<sup>1/</sup> CBG must record its concern about this question being raised after close  
of the hearing record, as CBG may well have asked additional questions of  
witnesses and introduced additional evidence had it known prior to the  
hearing that this question was to be an issue.

1           Section 31(a) of the Act simply directs the Commission to  
2     exercise its powers so as to insure continued conduct of research in  
3     certain fields identified in the subparts below. Those subparts,  
4     including the catch-all 31(a)(4), are simply fields into which research  
5     is to be encouraged. Thus, for example, when 31(a)(3) refers to agricultural  
6     uses, the controlling language of 31(a) remains--the activity must be  
7     research into potential agricultural uses. Commercial uses of atomic  
8     energy for agricultural purposes would not apply.

9           The absurdity that would result if one were to take the subparts  
10    of 31(a) as definitions of research rather than fields into which research  
11    may be conducted is demonstrated by considering subpart (2), which deals  
12    with the theory and production of atomic energy. All commercial power  
13    reactors are involved in the production of atomic energy, but certainly  
14    they are not entitled to Class 104 licenses as research reactors.  
15    To interpret the subparts as definitions of research would nullify the  
16    Act's provisions for two classes of license.

17           This is particularly clear when viewing the broad language of  
18    subpart (4), entailing the use of nuclear and radioactive materials  
19    and atomic energy "for all other purposes." Certainly this does not mean  
20    any use--be it research or commercial--of nuclear materials and atomic  
21    energy, because there then would be no distinction whatsoever between  
22    classes of licenses as defined in the Act, and no other class than 104,  
23    whereas the Act clearly establishes two classes. "All other purposes"  
24    must still be read according to the controlling language in 31(a):  
25    "conduct of research and development and training activities in the  
26    fields specified below." Research into potentially new agricultural,  
27    medical, or other uses of atomic energy is described in section 31(a),  
28    but once that research has been completed and the use commercially developed,  
   the activity can no longer qualify as research but is commercial use.

1 Thus research into processes that may some day have commercial (or what  
2 the Act previously described as "practical") value can be considered  
3 research, but once that activity has gone beyond the research and development  
4 stage and is merely a fully developed process used commercially, it must  
5 be licensed under the commercial license provisions. This is made clear  
6 in the legislative history that amended these provisions of the Act in 1970,  
7 making a Congressional determination that power reactors were no longer  
8 developmental but were commercial.

9 Prior to 1971 a commercial license (class 103 license)  
10 would only be given to "a production or utilization facility which is of a  
11 type found in writing by the Commission to have been sufficiently developed  
12 to be of practical value for industrial or commercial purposes." 21 FR 357  
13 (January 19, 1956). As of 1970 there had been no such finding and so no power  
14 facility had been licensed as a class 103 facility. See S. Rpt. 91-1247,  
15 91st Cong., 2nd Sess pp.8-9. Because of this, Congress decided the time  
16 for change had come and so it, by passing Public Law 91-560, eliminated the  
17 practical value test and required the Commission to issue new regulations.  
18 After notice and comment the Commission issued the regulations that are  
19 presently in effect. (See 38 FR 11445-6, May 8, 1973, and CEC's discussion  
20 in its April 24, 1983, pleading on the legal issues related to this contention).

21 One of the changes made in 1973 was to amend 10 CFR 50.21(c) by  
22 adding "or in 50.22". By adding this the regulations expressly recognize  
23 that certain research reactors that were considered class 104(c) facilities  
24 can and should be considered commercial reactors and licensed under 50.22,  
25 if they were used substantially for commercial purposes. Thus, any  
26 interpretation that makes it effectively impossible for a 104(c) license  
27 to be changed to a 103 would be impermissible, nullifying the law and regulations.  
28

1           If all conduct of the types specified in section 31 of the Act--  
2 without the controlling language in 31(a) regarding research into the fields  
3 identified in the subparts--were research and development by definition,  
4 that would impermissibly void the aforementioned regulation and the  
5 Act's provisions for Class 103 licenses. But if one interprets section 31  
6 as defining fields into which research may be conducted, provided it is first  
7 found to be research by the definitions of the Act, then section 31 is  
8 consistent. Only the latter interpretation is consistent with the act  
9 and the regulations. Otherwise, everything is research and nothing is  
10 ever commercial.

11  
12 If the Subparts of Section 31(a) Merely Describe Fields Into Which Research  
13 May be Conducted, What Then is the Definition of Research?

14           Research, as the term is used in Section 31, is defined in  
15 Section 11.x:

16           "The term 'research and development' means  
17           (1) theoretical analysis, exploration, or experimentation;  
18           or (2) the extension of investigative findings and theories  
19           of a scientific or technical nature into practical application  
20           for experimental and demonstration purposes, including the  
21           experimental production and testing of models, devices,  
22           equipment, materials, and processes."

(emphasis added)

23           Activity in one of the fields described in the subparts to Section 31(a)  
24 must, in order to be research in those fields, be experimental in the  
25 sense of testing new hypotheses and models; i.e., tentative trials,  
26 testing, and observations. In other words, to be experimental or developmental,  
27 the outcome must be unpredictable and unsure, as opposed to a precise service  
28 which is duplicated in a routine manner for a fee. Uranium West is not  
involved in inventing something new--it provides instead a precise,  
standardized service, offered elsewhere, as a commercial activity.

1 Uranium West merely assays samples, not much differently, in terms of  
2 commercial service, than the assay office in a mining town in the Old West.  
3 Researching new techniques for assaying might be research; once the method  
4 was developed, however, and reproduced for a fee in a routine fashion, it  
5 ceases to be R&D and becomes commercial. Perhaps when Dr. Kalil was a  
6 graduate student and developing his technique the activity might be considered  
7 research and development; but when UCLA permitted Dr. Kalil to form a  
8 private company and "set up shop" at the UCLA reactor facility, repetitively  
9 using the now-developed equipment as a normal businessman selling a service,  
10 all pretense of instruction or research had vanished and commercial activity  
11 had replaced.

12 This is made vividly clear when re-examining the legislative  
13 history. The precise situation at UCLA was foreseen by Congress, which  
14 indicated its clear intent that a research reactor that was used substantially  
15 for commercial or industrial purposes would not be eligible for a Class 104  
16 license. The enabling regulations of the Commission likewise explicitly  
17 recognized the situation we have at UCLA, giving as examples of research  
18 reactors that should be licensed under Class 103 (commercial)

19 "...research reactors that are used to produce radioisotopes  
20 for sale or that are used for neutron radiography on a commercial  
basis."

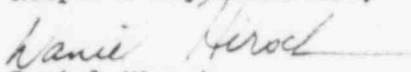
38 FR 11445

21 The UCLA reactor is used for neutron activation on a commercial basis;  
22 it is ineligible, due to that substantial use and the insubstantial  
23 instructional and research uses, for a Class 104(c) license.  
24  
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Conclusion

The subparts of Section 31(a) of the Atomic Energy Act, including subpart (4) about which the Board's inquiry is directed, merely identify fields into which research may be conducted. The identified fields included in the subparts are controlled by the controlling language in the umbrella paragraph which permits research into those areas. Research, as used in Section 31(a), is defined in Section 11.x. The activities of Uranium West, Inc., in no way fit the Act's definition of research and precisely fit the Congressional intent in mandating that research reactors used substantially for commercial purposes such as production of radioisotopes for sale or neutron radiography on a commercial basis not be given research reactor licenses. To do so in this case-- where the primary licensed activity of instruction represents a few hours of use per year--would fly in the face of the Act, the regulations, and Congressional intent.

Respectfully submitted,

  
Daniel Hirsch

dated this 30th day of December, 1983  
at Ben Lomond, California

UNITED STATES OF AMERICA  
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Facility License)

DECLARATION OF SERVICE

I hereby declare that copies of the attached: CEG's Response to the  
Board's November 30, 1983, Memorandum and Order

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: December 30, 1983.

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Daniel Hirsch  
President  
COMMITTEE TO BRIDGE THE GAP