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February 22, 1993

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Mr. James H. Reese, Chief  
Facilities Radiological Protection Branch  
U.S. Nuclear Regulatory Commission  
Region V  
1450 Maria Lane  
Walnut Creek, CA 94596-5368

PUBLIC DISCLOSURE

Subject: Docket No. 50-142, License No. R-71: Final Decommissioning Report For the Boelter Reactor Facility, Dated January 4, 1993

Dear Mr. Reese:

We have enclosed UCLA's response to the comments from the Nuclear Regulatory Commission (NRC) and Oak Ridge Institute for Science and Education (ORISE) after their review of UCLA's report and request to release the former reactor facility for unrestricted use. Please attach Addendum 1 to our report which was dated December 1992.

We have received a facsimile request from Mr. Daniel Hirsch to remove his former Washington D.C. mailing address and to correct the Committee to Bridge the Gap's Los Angeles zip code to 90025.

If there are any questions or clarifications that are needed, you may contact me at (310) 825-7147.

Sincerely,

Joseph M. Takahashi, C.H.P.  
Radiation Safety Officer/Owner's Representative

Enclosure: Addendum 1

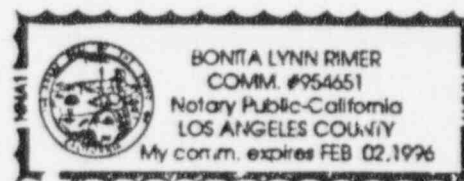
STATE OF CALIFORNIA  
COUNTY OF LOS ANGELES

On February 22, 1993, before me, the undersigned, a Notary Public in and for said County and State, personally appeared Joseph M. Takahashi, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

Witness my hand and official seal

Notary Public in and for said County and State

cc: Distribution List Attached



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Docket No. 50-142

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ADDENDUM 1 TO  
FINAL DECOMMISSION REPORT  
FOR THE  
BOELTER REACTOR FACILITY DISMANTLEMENT  
AND  
FINAL DECOMMISSIONING PROJECT

UNIVERSITY OF CALIFORNIA  
LOS ANGELES, CALIFORNIA  
DECEMBER 1992

## RESPONSES TO COMMENTS FROM NRC AND ORISE (2/18/93)

### GENERAL:

Q: *A statement should be included which indicates why measurements for alpha activity were not performed.*

*Were surveys of the area immediately adjacent to the reactor area performed, for example the transformer room. Is the survey data for these areas available?*

*Throughout the document, one of the release criteria is stated as 5 mrem/h above background at 1 meter. Data supporting this criteria is reported in the same units of mrem/h. The guideline is stated as 5µR/h above background at 1 meter. Did your data meet this criteria?*

A: Examination of the reactor operating records and measurement of beam port concrete and steel samples on a Germanium Spectrometry system and a Liquid Scintillation Spectrometry system did not reveal the presence of any alpha activity. The isotopes found in these measurements pointed to the relevant category in Table I of the Regulatory Guide 1.86 as the last one, i.e., Beta-gamma emitters except Sr-90 and others. The corresponding limits are:

Average: 5000 dpm beta-gamma/100 cm<sup>2</sup>

Maximum: 15,000 dpm beta-gamma/100 cm<sup>2</sup>

Removable: 1000 dpm beta-gamma/100 cm<sup>2</sup>

Moreover, the hot spots found during the final release surveys were also checked for the presence of any fixed alpha activity and majority of the smears were counted for both beta/gamma and alpha activity with a phoswich detector.

The transformer vault, due to its location and status, demonstrates little likelihood of any radioactive contamination. This vault was considered outside the scope of decommissioning and no surveys were performed inside the vault. The presence of PCBs in the room constituted sufficient risks to preclude a thorough radiation survey which was not considered necessary. The reactor room ramp area would be the nearest surveyed area to the transformer vault.

It is perhaps correct that guidance for the criteria is usually stated as 5µR/h above background at 1 meter. UCLA was, however, following the conditions of Section 2.5 of the Atomic Safety and Licensing Board Settlement Agreement dated September 30, 1985 which states the criterion as 5µrem/h above background at 1 meter.

Incidentally, we presume there is a typographical error in your statement which reads 5 mrem/h and not 5µrem/h.

SPECIFIC:

Q1: *Page 5, paragraph 1 - the type and enrichment of fuel utilized should be included in the description.*

A1: The fuel was 93% enriched U-235.

Q2: *Pages 6 and 7, Figures 2 and 3 - Were any difficulties in surveying the reactor area encountered due to the presence of the Tokamak? Is there any possibility for cross contamination of the reactor area as a result of activities performed in the Tokamak?*

A2: The former reactor area and the Tokamak facility are sealed from each other by two doors. No difficulty was encountered in surveillance of the area due to the presence of the Tokamak. Very little possibility, if any, exists of any cross contamination of the reactor area as a result of activities in the Tokamak facility which has film badge and area TLD monitors.

Q3: *Page 10, Processes Performed - Were there any spills or abnormal/unplanned releases (excluding gaseous) during the operating history of the former reactor?*

A3: An examination of reactor records did not indicate any spills or abnormal/unplanned releases that could significantly impact the release of the facility. This was substantiated during the decommissioning process by the absence of unsuspected isotopes or unexpected level of contamination.

Q4: *Page 11 - Is there any explanation for the reported increase in exposure rates reported on Figures 6 and 7 and those reported in the tables in Appendix C, i.e. in the Change Room and Control Room?*

A4: Figure 6 reports the exposure rate in the High Bay Area on the top of the monolith, boundaries of the catwalk, and reactor room wall on the upper level. Figure 7 reports exposure rate ranges in the Control Room and Change Room on the upper level. Note that both figures give exposure rates prior to decommissioning and are measured with a portable Victoreen 450P pressurized ion chamber. This digital instrument is quite unstable at exposure rates below 100  $\mu$ R/h and hence, a range of fluctuation is given.

Appendix C reports dose-equivalent rates post decommissioning and is measured with an analog tissue-equivalent Bicron micro-rem meter designed to measure low readings in the micro-rem range.

Q5: *Page 21, Major Contaminants - In the "concrete chip" and the "concrete sample," the H-3 concentration was 14% and 6% of the total reported activity, respectively. Were the guidelines, as applied to the determination of total surface activity, adjusted to take into account this unmeasurable fraction of the residual activity?*

A5: The activity concentrations reported on Page 21 reflect the isotope content and concentration at a point in the distribution of activated concrete in the monolith released

as LSA. Your suggestion of correcting the guideline of 5000 dpm/100 cm<sup>2</sup> for total surface activity by accounting for the highest contribution of H-3 in a sample at a point has merit. However, for release of materials for unrestricted use, the action level implemented by the Contractor was 3000 dpm/100 cm<sup>2</sup> for the averaged total surface activity.

Q6: *Page 24, Contaminated Drain Line Removal - Was the embedded drainline completely contained in the area which was surveyed?*

A6: Yes. The contaminated drain lines were removed from the reactor base and disposed into LSA boxes within the Reactor High Bay area. (See pipes within the shaded area shown in the figure in Appendix N of the Final Survey Report)

Q7: *Page 38, Floor Drains and Piping Inlet/Outlets - Is the contamination and direct measurement survey data for these drains available for our review?*

A7: Yes. This data was enclosed as part of Appendix N in the Attachment entitled, "Final Release Survey Report for the Boelter Reactor Facility Dismantlement and Final Decommissioning Project".

Q8: *Page 39, Soil Sample - At a minimum, the MDAs for the contaminants potentially present should be included in this section. Is there any explanation for the elevated H-3 concentrations?*

A8: The soil sample results reported from an outside lab using EPA method no. 906 do included lower limits of detection (LLD) for each tritium and C-14 analysis. Specifically, the LLD for tritium in soil was 5.00E-7 µCi/ml and LLDs for C-14 in soil ranged from 1.00E-7 to 8.00E-7 µCi/g (see Appendix O).

The highest reported tritium concentration was 4350 pCi/l. For comparison, as reported by our Contractor, a typical tritium background used at the DOE Pinellas Plant was 5000 pCi/l and the EPA drinking water standard for tritium is 20,000 pCi/l.

Q9: *Were any surface contamination and direct surface measurements made inside the inlet and outlet of the ventilation duct? Is the data available?*

A9: The ventilation duct was surveyed as a separate item and is included in the Reactor Room Walls final survey package as Appendix H of the Attachment aforementioned in A7. The measured exposure rates inside the duct were all 13 µrem/h, the removable contamination was all < MDA and the highest direct measurements on the ventilation duct louver was 814 dpm/100 cm<sup>2</sup>.