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SANTA BARBARA · SANTA CRUZ

OFFICE OF THE CHANCELLOR
LOS ANGELES, CALIFORNIA 90024

October 15, 1982

John H. Frye, III, Chairman
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Emmeth A. Luebke
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Oscar H. Paris
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

In the Matter of
The Regents of the University of California
(UCLA Research Reactor)
Docket No. 50-142
(Proposed Renewal of Facility License)

Dear Administrative Judges:

This is to advise the Board that the University has recently amended its UCLA License Renewal Application of Febraury 1980. The enclosed letter with attachments describes the amendments.

Among the changes made please note that the University has reduced the licensed limit on the permissible inventory of fuel at the facility to less than 5000 grams of enriched U-235. University made this change in response to the NRC Staff's letter of September 27, 1982 which requested that the University reduce the licensed inventory limit to the level of the actual inventory in order to conform to Commission policy relating to the use of highly-enriched uranium. The other amendments to the application concern minor matters.

Respectfully submitted,

William H. Cormier
UCLA Representative

Enclosure

cc: Service List (w/enclosure)

D503

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2567 Boelter Hall
SCHOOL OF ENGINEERING AND APPLIED SCIENCE
LOS ANGELES, CALIFORNIA 90024

October 8, 1982

Mr. Cecil O. Thomas, Acting Chief
Standardization & Special Projects Branch
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket No. 50-142
License No. R-71

Dear Mr. Thomas:

The attached pages which bear the amendment date Oct. 10, 1982 are to amend the UCLA license renewal application of February 1980. The pages are to replace the similarly numbered pages in the application which can then be removed.

The amended page 5 of the body of the application reduces the permissible inventory of reactor fuel to less than 5000 gms of U-235 (~ 93% enriched).

In an unrelated change, amended pages V/3-4 and V/3-6 alter the purpose and function of the Safety High Level Radiation Monitor as stated in the Technical Specifications of the application. The instrument was originally procured and installed in November 1980, in anticipation of the possibility that hold-up tanks would be installed at the facility. The purpose was to detect an accidental or premature blow-down of the tanks to the stack, and for that reason the detector was located in the stack. The hold-up tanks were not installed, and the instrument can now be more usefully employed to detect an unusual level of radiation that might occur in the reactor room from, for example, a dropped fuel element. The monitor will sound an alarm alerting the reactor room occupants to a potential emergency.

Five additional pages hereby amended to correct typographical errors are (III/A, V/5-3, V/6-10) or to improve clarity (V/1-3, V/3-3).

With respect to the amendment reducing the permissible quantity of fuel, note that the amendment is made in response to your letter of Sept. 27, 1982 which referenced Commission policy on the use of HEU, and of which we were only recently made aware.

I hope that these amendments will meet with your approval.

Sincerely,

WFW

Walter F. Wegst

Walter F. Wegst
Director, Research &
Occupational Safety

(iii) Foreign Relationships: The applicant is in no way owned, controlled, or dominated by an alien, a foreign corporation, or foreign government.

(4) Agent: The applicant is not acting as the agent or representative of another in filing this application. The applicant is the principal party.

e. Class of license applied for:

Class 104 license

Use to which the facility will be put:

The reactor and its supporting laboratories will be used for the education of senior undergraduate and graduate students in nuclear engineering and related sciences. In addition to formal courses and demonstrations, the reactor will be used to support research at the M.S. and Ph.D levels.

Period of time for which license is requested:

Twenty (20) years, or until March 30, 2000.

Other licenses applied for in connection with this facility:

Special Nuclear Material: (1) Less than 5000 gms of enriched U-235, and (2) 32 gms of Pu-239 as a Pu-Be sealed neutron source.

f. Financial qualifications of the applicant:

This item is treated in Appendix I "Financial Qualifications."

g. Deleted

h. Not applicable

i. Not applicable

j. No restricted data or defense information is contained in this application or in any material offered in support of this application.

APPENDIX III

ARGONAUT SAFETY ANALYSIS REPORT (ASAR)

Attachment A

Analysis of Credible Accidents

for Argonaut Reactors

NUREG/CR-2079-PNL-3691
Battelle Pacific Northwest Laboratory
Richland, Washington
April 1981

[incorporated by this reference]

A. Secured Experiment. Any experiment, experiment facility or component of an experiment is deemed to be secured, or in a secured position, if it is held in a stationary position relative to the reactor core.

B. Movable Experiment. A movable experiment is one which may be inserted, removed, or manipulated while the reactor is critical.

C. Untried Experiment. An Untried Experiment is a single experiment or class of experiments that has not been previously evaluated and approved by the Reactor Use Committee.

1.14 EXPERIMENT FACILITIES

An Experiment Facility is any structure, device or device or pipe system which is intended to guide, orient, position, manipulate, control the environment or otherwise facilitate a multiplicity of experiments of similar character.

1.15 CONTROL ROD

A Control Rod is a semaphore-type blade fabricated with cadmium as the neutron absorbing material which is used to compensate for fuel burnup, temperature, and poison effects. A control rod is magnetically coupled to its drive unit allowing it to perform the safety function when the magnet is de-energized.

.16 READILY AVAILABLE ON CALL

Readily available on Call means an individual who:

A. has been specifically designated and the designation known to the operator on duty,

B. keeps the operator on duty informed of where he may be rapidly contacted (e.g., by phone, etc.),

C. is capable of getting to the reactor facility within a reasonable time under normal conditions (e.g., 1 hr. or within a 30 mile radius).

1.17 ROD DROP TIME

Rod Drop Time is the elapsed time between the instant a limiting safety system set point is reached and the instant that the rod is fully inserted.

1.18 DROP-ROD SCRAM (or simply SCRAM)

All four control rods fall by gravity into the core. Cooling water circulation continues.

Channel	No. Operable	Function
Count Rate	1[a]	Inhibit @ < 2 cps
Core Water Level	1	Scram @ < 45 in.
Primary Coolant Flow	1[b]	Scram @ < 10 gpm
Manual Button	1	Full Scram
Keyswitch	1[c]	Scram
Closures	6[b]	Full Scram > 1 watt

Notes: a. Operable below 0.02 W and bypassed above.

b. May be bypassed at power levels below 1 watt.

c. Loss of console power causes full scram

3.2.3.1 Bases

The power level scram provides redundant automatic protective action to prevent exceeding 125% of the license limit on reactor power.

The period scram, assisted by the intermediate rod inhibit, limits the rate of increase in reactor power to values that are controllable without excessive power levels or temperature. These functions are not limiting safety system response.

The inhibit on the count rate channel prevents inadvertent criticality during cold startup that could arise from lack of source neutrons and the neutron instrument response.

Reactor core low water level scrams the reactor. This scram also prevents startup until the minimum core water level is reached.

If the primary coolant outlet temperature exceeds 180°F, a high temperature alarm annunciates at the control room annunciator panel.

The coolant flow scram ensures adequate coolant flow to prevent boiling in the core.

The keyswitch scram prevents unauthorized operation of the reactor.

Bypass is permitted on non-power parameters for experiments, tests, and special purposes only [refueling].

3.3 RADIATION MONITORING SYSTEMS

The minimum acceptable radiation and annunciating instrumentation required for reactor operation is as follows:

Type	No. Operable	Max. Alarm Setpoint	Function
Safety high level radiation monitor	1	25 mR/hr	Detect high radiation in reactor room Sound alarm audible in reactor room
Exhaust Duct Monitor ("Stack Monitor")	1	1.8×10^{-5} μCi/ml*	Alarms with displays in the control room

*In the event that the limits for Argon 41 contained in 10 CFR Part 20, Appendix B, Table II, with a reduction factor of 460 are exceeded in the stack, the ventilation fans shall be shut down and the automatic damper system closed to limit natural circulation from the reactor room to the external environment and the reactor is automatically scrammed.

Fixed Area Monitors	2	5 mR/hr	Detect radiation (gamma) in key locations; alarm in control room
Evacuation Switch	1	---	Alarm to initiate evacuation sequence (manual)

NOTE: For maintenance or repair, required radiation monitors may be replaced by portable or substitute instruments for periods up to 24 hours provided the function will still be accomplished. Interruption for brief periods to permit checking or calibration is permissible.

3.3.1 BASES

The radiation monitoring system components are located and have set points to ensure that 10 CFR Part 20 requirements are not exceeded for restricted and unrestricted areas.

3.4 ENGINEERED SAFETY FEATURES

These specifications apply to required equipment for the confinement of activity through controlled release of reactor building air to the atmosphere.

3.4.1 SAFETY HIGH LEVEL RADIATION MONITOR

3.4.1.1 Specification

See 3.3

3.4.1.2 Bases

This monitor senses excessive radiation in the reactor room and automatically sounds an alarm in the reactor room.

3.4.2 CONFINEMENT SYSTEM

3.4.2.1 Specification

A. The exhaust fan shall have a capacity of 14,000 CFM and shall maintain a negative pressure in the reactor building and an exhaust rate from the reactor room greater than 8000 CFM.

B. The high bay ventilation exhaust and intake fans are interlocked to shut off simultaneously when the ventilation system is shut down.

C. Spring loaded, air operated damper motors automatically close the intake and exhaust dampers.

D. All doors to the reactor high bay shall be normally closed while the reactor is operating. Transit is not prohibited under proper supervision.

E. The safety rods shall automatically scram when the ventilation fan is shut down.

3.4.2.2 Bases

To effect controlled release under normal conditions of gaseous activity present in the building atmosphere, a negative pressure is required so that the air flow to the reactor room is non-radioactive air from "cold" areas in the building. This serves to dilute reactor room ambient air prior to discharge, and to prevent the flow of reactor room air out of the reactor room to other parts of the building. Under emergency conditions, the reactor room dampers will close, and the reactor will be scrammed.

5.3.2.4 Neutron Source

For obtaining reliable neutron information necessary to startup from a cold shut-down condition, a radium-beryllium neutron source is permamently installed.

5.3.3 ROD CONTROL SYSTEM

5.3.3.1 Shim (Control) Rods

Three control rods are provided for the control of core reactivity. These rods are cadmium-tipped magnesium (see 4.3.4). Individual integral worths vary from about $2.40-$2.70, depending on position and individual characteristics. The rods are coupled to drive shafts through electromagnetic clutches that allow release of the rods within 12 ms after receiving a scram signal. Position indicators on the control console show the extent of withdrawal for each rod. To limit the rate of reactivity increase upon startup, the rod drive speeds are limited to 7.7 ¢/sec. and only one rod can be withdrawn at time. These rods are not otherwise automatically controlled, but are used to compensate for seasonal and long-term reactivity changes.

5.3.3.2 Regulating Rod

One regulating rod is provided to aid in fine control and maintenance of constant reactor power for long periods. The rod is limited to a total worth of about $1.80 and can be either manually or servo-controlled. The drive speed is approximately 1% (of full range) per second. In the commonly used range, this amounts to approximately $0.03/second.

B. Any of the following:

B.1 a violation of the Technical Specification or the facility license;

B.2 an unanticipated or uncontrolled reactivity change in excess of $0.90 or total reactivity in excess of $3.00;

B.3 an uncontrolled or unanticipated release of radioactivity from the site;

B.4 a safety system component malfunction or other system or component malfunction which renders or threatens to render the safety system incapable of performing its intended safety function;

B.5 an observed inadequacy in the implementation of either administrative or procedural controls, such that the inadequacy causes or could have caused the existence or development of an unsafe condition with regard to reactor operation;

B.6 abnormal degradation of reactor fuel as revealed by periodic inspection;

B.7 if the power level exceeds 135 kw.

6.5.3 WRITTEN REPORTS

A written report within 30 days to the Commission of:

A. Permanent changes in the facility organization structure;

B. Significant changes in the transient or accident analysis as described in the Safety Analysis Report;

C. Substantial variances of safety related operating characteristics from previously predicted or measured values.