



Rockwell
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December 14, 1982

In reply refer to 82ESG-8680

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

Reference: Application to Authorize the Dismantling of the L-85
Facility, Docket No. 50-375, dated March 10, 1980

Dear Mr. Thomas:

Subject: Application for Dismantling Order for Facility
License No. R-118, Docket No. 50-375

Our application for an order to authorize dismantling of the facility, disposal of the component parts, and voluntary surrender of Facility License No. R-118, Docket No. 50-375, and the necessary supporting statement to describe the status of the facility and the dismantling plan, was submitted on March 10, 1980. Since that submission, a number of discussions have been held with the reactor licensing staff regarding some of the details of the dismantling plan and the criteria on contamination limits for the release of facilities and equipment for unrestricted use.

As a result of these discussions, the uranyl sulfate fuel solution was removed from the reactor core on July 29, 1982, and shipped for recovery to the chemical processing plant at the Idaho Nuclear Engineering Laboratory on September 28, 1982. This removal of the solution has resulted in a significant change in the status of the facility, with a consequent impact on the detailed procedures required for implementation of the dismantling plan.

These physical changes in the facility, together with the considerations on decontamination criteria, have resulted in the preparation of a revised supporting statement for our dismantling order application. Twenty-two copies of this revised statement are enclosed here for your review and approval.

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We would appreciate your early review of these changes to the application so that we can proceed with the dismantling and decontamination of the facility. If you have any questions concerning either the physical status of the facility or the revisions to the application, please contact me at (213) 700-4439.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "M. E. Remley".

M. E. Remley, Director
Health, Safety & Radiation
Services

1129A/paw

Enclosure: Twenty-two copies of the Revised Supporting Statement
for Dismantling Order Application

STATEMENT IN SUPPORT OF APPLICATION FOR
AUTHORITY TO DISMANTLE THE L-85 FACILITY,
DISPOSE OF ITS COMPONENT PARTS, AND
SURRENDER VOLUNTARILY FACILITY LICENSE R-118
DOCKET 50-375

1.0 INTRODUCTION

1.1 SCOPE AND PURPOSE OF REPORT

The L-85 Reactor, located at the Rockwell International Santa Susana Field Laboratory, has been licensed as an operating facility since January 5, 1972. From 1952 until 1972, it was an AEC-owned facility. It was located at Downey, California, under the designation WBNS from 1952 until 1956, where it was operated at a maximum power level of 0.5 watt. It was moved to its present location in the latter part of 1956, modified to increase the power level, and redesignated as the AE-6 Reactor.

Energy Systems Group has determined that it is no longer desirable to maintain licensed possession of the facility. Therefore, the purpose of this report is to present a plan for dismantling the facility and disposing of the component parts and to provide supporting information for an application to surrender voluntarily Facility License R-118, Docket 50-375.

1.2 REACTOR FACILITY

The L-85 Reactor is located in Building T093 of the Rockwell International Santa Susana Field Laboratory. A detailed description of the facility and reactor is presented in the Safety Analysis Report.*

*V. Swanson, "Safety Analysis Report for the L-85 Nuclear Examination Reactor," AI-70-73, September 24, 1971

1.3 REACTOR

The L-85 Reactor, which is of the water boiler type, has an authorized operational limit of 3 kW thermal. The fuel is fully enriched uranyl sulfate dissolved in water and is contained in a spherical stainless steel core. The core is reflected by a surrounding cylinder of graphite. Shielding is provided by ordinary concrete. Reactor control is provided by two safety rods and two control rods which operate horizontally in the reflector region outside the core. The two safety rods are driven in by gravity through a cable and pulley system on a scram condition.

2.0 FACILITY STATUS

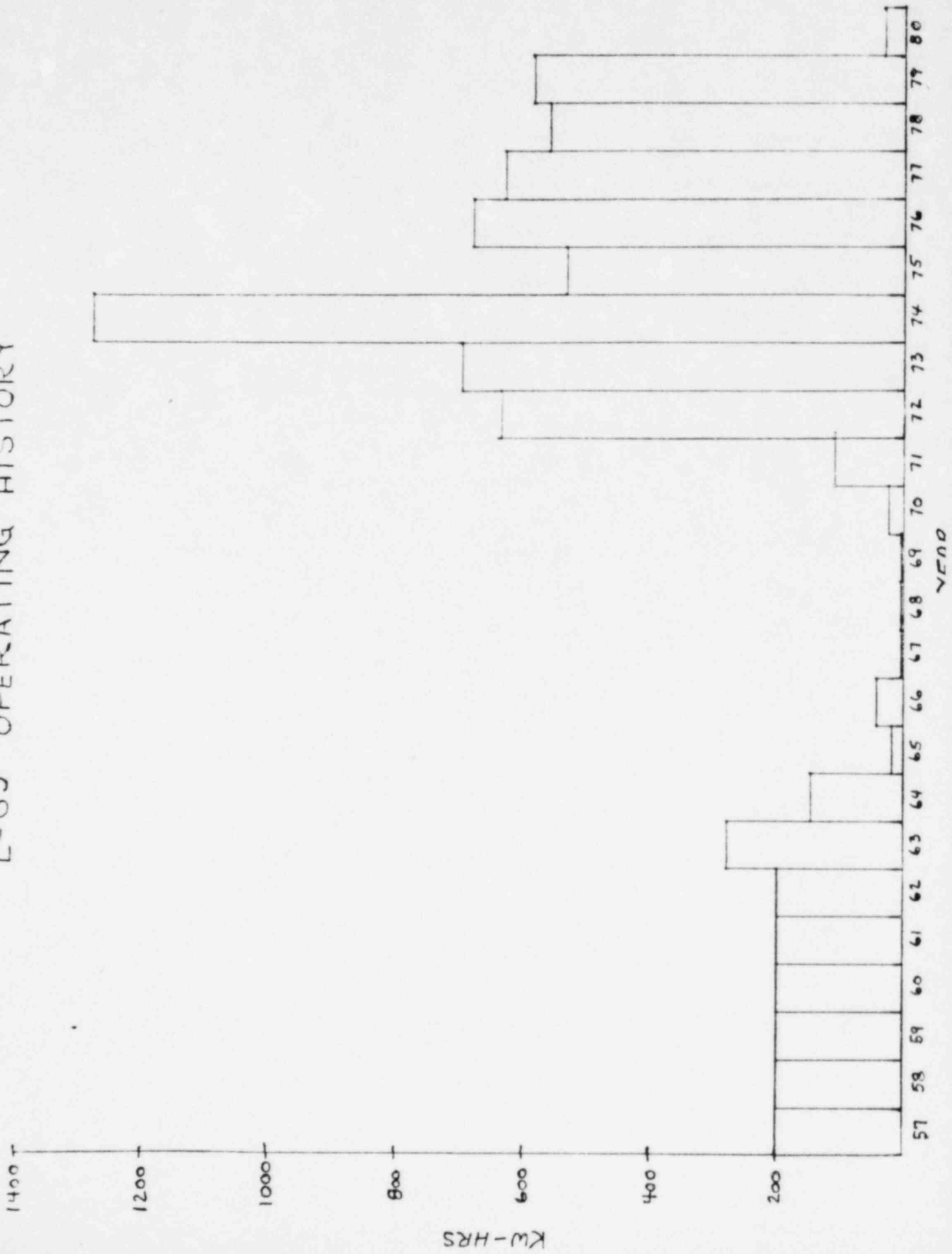
The reactor has been operated as needed to provide a neutron source for subcritical (exponential) experiments, neutron radiography, and training functions. Most neutron radiography operations were 45 to 60 minutes in duration at a power level of 2.75 kW. Most of the training operations were for a few minutes at power levels of 1 to 5 watts. No subcritical experiments were performed after 1966. An integrated-power history of the reactor is given in Figure 1. A total of 7.5 MWh of operation was accumulated over the 24-year period from 1957 to 1980 inclusive.

Operation of the reactor was discontinued on February 29, 1980. Except for required periodic checks, the reactor was maintained in a shutdown condition, with fuel in place, until July 29, 1982, when the fuel solution was drained into approved shipping containers for transport to the chemical processing plant at INEL. It was shipped to INEL on September 28, 1982 and arrived on September 30, 1982.

Since the fuel has been removed from the reactor core vessel, no further periodic checks and tests can be accomplished, and they have been discontinued.

The core has been drained, rinsed, and dried. Most of the core coolant water has been drained. Analysis of the coolant water indicated that it contained only about 1% of the MPC from Co-60 for release to an unrestricted area.

FIGURE 1.
L-85 OPERATING HISTORY



Calculations based on the activation of reactor components and surrounding shielding indicate that the total residual activity is approximately 1.3 Ci. Most of this activity is contained in the core vessel, the steel reflector tank, and the control rods.

3.0 DISMANTLING PLAN

The L-85 Reactor will be dismantled by Energy Systems Group personnel in accordance with procedures which will have been developed and subjected to appropriate internal review. These procedures will outline a method and schedule for removal of the reactor component parts and all contaminated or activated concrete and structural materials. The procedures will also include requirements for protective clothing and precautions to prevent excess exposure of personnel to radiation fields and radioactive contamination. Health Physics staff from the Health, Safety & Radiation Services Department will monitor all operations.

All equipment and materials which are to be released for unrestricted use must meet the criteria listed in Table 1. Equipment and material which cannot be decontaminated to the levels of Table 1 will either be disposed of at a licensed radioactive disposal site or will be stored or used at another facility where limited radioactive material is acceptable and appropriate authorization is obtained. Possession of the radioactive material is authorized under Energy Systems Group's California Radioactive Material License No. 0015-70. It is expected that the concrete shielding and floor immediately adjacent to the reactor will have to be removed and packaged for disposal at a licensed radioactive disposal site.

On completion of the removal of all components of the L-85 Reactor, the facility will be surveyed to assure that no area is contaminated or activated in excess of levels which would prevent release for unrestricted use. The facility will be inspected and approved for release by the NRC. It will then be made available for other productive use.

TABLE 1
CONTAMINATION AND RADIATION LIMITS FOR RELEASE OF FACILITIES
AND EQUIPMENT FOR UNRESTRICTED USE

Surface Contamination

Surfaces must be decontaminated to levels consistent with Table 1 of Regulatory Guide 1.86.

Radioactive Material Other Than Surface Contamination
(Co-60, Eu-152, and Cs-137)

Co-60, Eu-152, and Cs-137 that may exist in concrete, components, structures, and soil must be removed such that the radiation level from these isotopes is less than 5 μ R/h above natural background,* as measured at 1 meter from surface, or the occupancy of the facility must be limited so that no person will receive more than 10 mrem/year.

General

Site survey procedures acceptable to the NRC must be used.

*Radiation from naturally occurring radioisotopes as measured at a comparable uncontaminated structure or exterior soil surface.

4.0 CONCLUSION

As described above, the reactor will be disassembled into its component parts. Those components which meet the criteria for release for unrestricted use will be released to Energy Systems Group Property Management to be available for productive use in any appropriate projects.

Those items which do not meet the criteria for unrestricted use will be packaged for burial at a licensed radioactive material disposal site or used in activities where the radioactivity is duly authorized and acceptable. Completion of this disposal activity, together with a final survey of the facility to assure that there is no radioactive contamination in excess of the criteria for

unrestricted use, will eliminate any further requirements for facility surveillance and licensing under 10 CFR Part 50. A report on the results of this final survey will be prepared and submitted with our request for a final inspection prior to termination of the R-118 license.

It is concluded that with completion of the above described activities, voluntary surrender of License R-118 for the L-85 Reactor facility can be accomplished without undue risk to the common defense and the health and safety of the public.