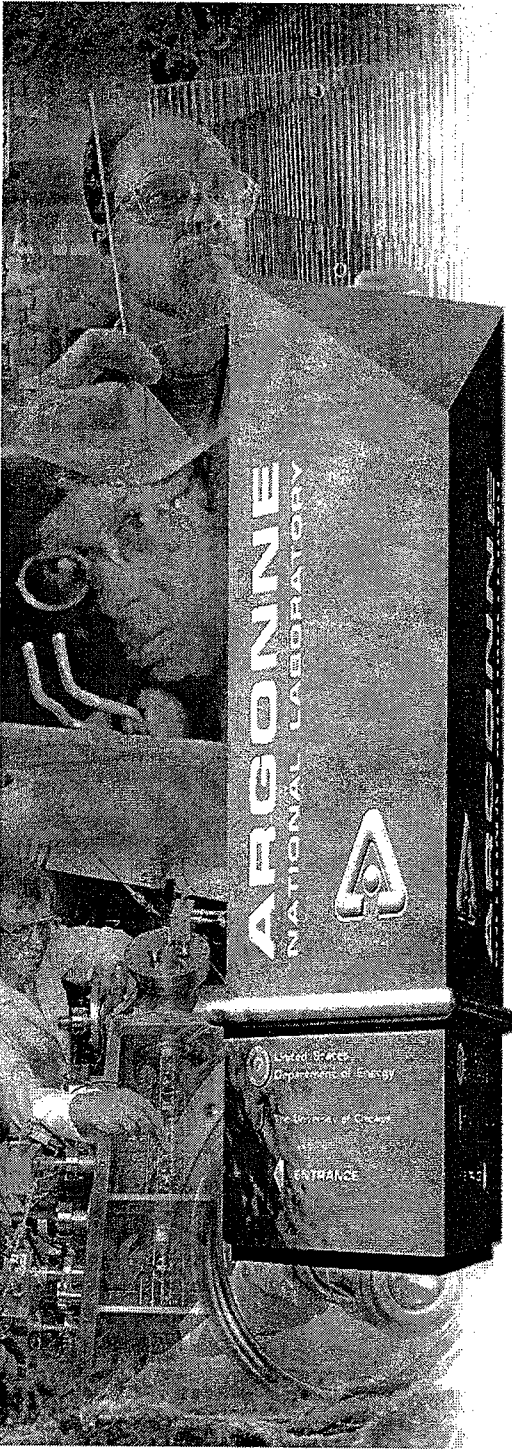


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# **DECOMMISSIONING L.5.3 C**

## **Argonne National Laboratory**



*A U.S. Department of Energy  
Office of Science Laboratory  
Operated by The University of Chicago*



# DECOMMISSIONING

## FROM THE CODE

The operating organization should ensure that siting, design, construction, operation, maintenance, and utilization of the research reactor are carried out keeping in view the ultimate decommissioning of the installation.

The operating organization should prepare a comprehensive decommissioning plan and assessment of environmental impact for review and approval by the regulatory body prior to commencing decommissioning activities. The elements of the plan should include:

- (a) the broad decommissioning option to be pursued and the justification for choosing that option;
- (b) the decontamination and dismantling techniques to be applied so as to minimise waste generation and airborne contamination;
- (c) arrangements for dealing with the fuel and radioactive waste arising from the research reactor;
- (d) arrangements for radiation protection during the decommissioning process; and
- (e) a description of the volumes, activities and types of waste to be generated in the decommissioning and the means proposed to manage these wastes safely.

# **DECOMMISSIONING OF RESEARCH REACTORS**

## **SOURCE MATERIAL**

### **IAEA**

**DECOMMISSIONING OF NUCLEAR POWER PLANTS  
AND RESEARCH REACTORS, NO. WS-G-2.1**

**DECOMMISSIONING TECHNIQUES FOR RESEARCH  
REACTORS, TECHNICAL REPORT SERIES NO.373, 1994**

### **US**

**10CFR50.2, 10CFR50.82(b)(1)**

**10CFR20 Subpart E**

**10CFR20.1402 &1405**

**10CFR50.82(b)(5)**

**10CFR50.82(b)(1)(ii &iii)**

**NUREG 1537, PART 1 for guidance**

**MULTI-AGENCY RADIATION SURVEY AND SITE  
INVESTIGATION MANUAL (MARSSIM),**

**[www.epa.gov/radiation/cleanup](http://www.epa.gov/radiation/cleanup)**

**IMPLEMENTING THE MARSSIM APPROACH FOR  
DESIGN AND CONDUCT OF RADIATION SURVEYS, OAK  
RIDGE ASSOCIATED UNIVERSITIES, OAK RIDGE  
INSTITUTE FOR SCIENCE AND EDUCATION CONTAINS  
MANY US REFERENCES**

**SEE ACTUAL PLANS OF GEORGIA TECH, U. OF  
MICHIGAN, NASA (PLUM BROOK), CINTI-CHEM**

# **DECOMMISSIONING PLANS FOR OPERATING REACTORS**

**ALL OPERATIONAL ACTIVITIES, INCLUDING MAINTENANCE,  
TESTING, INSPECTION, MODIFICATION AND EXPERIMENTS  
SHALL BE CONDUCTED IN A WAY WHICH WILL FACILITATE  
DECOMMISSIONING**

**UP TO DATE DOCUMENTATION OF THE REACTOR SHALL BE  
KEPT TO FACILITATE PLANNING OF THE DECOMMISSIONING**

**PERFORM EVALUATION OF ONE OR MORE  
DECOMMISSIONING ALTERNATIVES APPROPRIATE TO THE  
GIVEN REACTOR**

**ENTOMBMENT OF RADIOACTIVE STRUCTURES AND  
LARGE COMPONENTS AFTER REMOVAL OF ALL FUEL  
ASSEMBLIES AND OF ALL READILY REMOVABLE  
RADIOACTIVE COMPONENTS AND WASTE**

**PROTECTIVE STORAGE IN AN INTACT CONDITION AFTER  
REMOVAL OF ALL FUEL ASSEMBLIES AND OF ALL  
READILY REMOVABLE RADIOACTIVE COMPONENTS AND  
WASTE**

**REMOVAL OF ALL RADIOACTIVE MATERIAL AND  
DECONTAMINATION TO PERMIT UNRESTRICTED USE**

**PROCEDURES FOR HANDLING, DISMANTLING AND DISPOSAL  
OF EXPERIMENTAL DEVICES OR OTHER IRRADIATED  
EQUIPMENT THAT REQUIRES STORAGE AND EVENTUAL  
DISPOSAL SHOULD BE ESTABLISHED IN ADVANCE**

**PREPARE A ROUGH COST ESTIMATE BASED, PERHAPS. ON  
WHAT IT COST TO DECOMMISSION SIMILAR FACILITIES**

**INVESTIGATE ARRANGEMENTS FOR DEALING WITH THE  
FUEL AND RADIOACTIVE WASTE**

# **CRITICAL TASKS FOR DECOMMISSIONING**

**FUEL REMOVAL**

**CHARACTERIZATION OF FACILITY**

**SAFETY ASSESSMENT (PREPARATION OF SAR)**

**DEVELOPMENT OF A PLAN**

**CONFINEMENT MAINTENANCE AND MODIFICATION**

**DECONTAMINATION TO APPROPRIATE LEVEL AND  
DISMANTLING**

**DISPOSAL**

**MAINTENANCE**

**PREPARING AND EXECUTING FINAL RADIOLOGICAL SURVEY**

**PREPERATION OF FINAL REPORT AND PRESENTATION TO  
THE REGULATORY BODY**

**TERMINATION OF LICENSE**

# **MANAGEMENT DURING DECOMMISSIONING**

## **RESPONSIBILITY OF THE OPERATING ORGANIZATION**

### **INVOLVES:**

**COORDINATION WITH REGULATORY BODY**

**QUALITY MANAGEMENT (ASSURANCE) AND DOCUMENTATION**

**CONTRACTS AND SUPERVISION OF CONTRACTS**

**RADIATION PROTECTION INCLUDING ON AND OFF SITE MONITORING**

**WASTE MANAGEMENT**

**PHYSICAL PROTECTION**

**TRAINING OF STAFF AND CONTRACTORS**

**EMERGENCY PLANNING**

**FINAL RADIOLOGICAL SURVEY**

**PREPARATION OF FINAL REPORT**

**OBTAIN TERMINATION OF LICENSE**

