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Docket No. 50-116

June 22, 1993

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Subject: Technical Specifications for the Iowa State University Reactor Facility
Update of Technical Specification Definitions

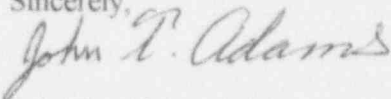
Dear Sir:

The addition of a definition for Confinement Secured to the Technical Specifications for the UTR-10 Reactor has been developed and is submitted for approval. The need for this addition is to provide clarity to Technical Specification 3.4.3.B. Also enclosed is the complete text of the Definitions section in which the material added has been underlined, building drawings, Technical Specification 3.4, and an explanation for the addition.

The need for the additional definition was discussed with and approved by the Reactor Use Committee.

Questions may be directed to me during normal working hours at (515) 294-0539.

Sincerely,



John T. Adams
Reactor Manager

Enclosure

cc: D. B. Bullen, Facility Director
R. A. Jacobson, Chm., Radiation Safety Committee
T. H. Okiishi, Chm., Mechanical Engineering Department
E. E. Sobottka, Dir., Environmental Health & Safety
T. L. Zimmerman, Chm., Reactor Use Committee
US NRC, Region III

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1.0 DEFINITIONS

The terms Safety Limit, Limiting Safety System Setting, and Limiting Condition for Operation are as defined in paragraph 50.36 of 10 CFR Part 50.

CHANNEL TEST - The introduction of a signal into the channel for verification that it is operable.

CHANNEL CALIBRATION - The adjustment of the channel such that its output corresponds with acceptable accuracy to known values of the parameter which the channel measures. Calibration shall encompass the entire channel, including equipment actuation, alarm, or trip and shall be deemed to include a Channel Test.

CHANNEL CHECK - A qualitative verification of acceptable performance by observation of channel behavior. This verification, where possible, shall include the comparison of the channel with other independent channels or systems measuring the same variable.

CONFINEMENT BOUNDARY - The surface surrounding the reactor facility defined by the interior partition walls of offices and laboratories on the north, east and south sides of the building and by the west interior wall which isolates the basement, first floor, and the west corridor of the second floor from the central bay.

CONFINEMENT SECURED - The confinement shall be considered secured when:

a. Doors 1-2, CS 101, 101, 114, 113-1, CX112, 112, 111-1, CX111, CC110, CE117-2, 112A-3, CE217-2, CC211, 209E, 210, 211, 213-1, 213-2, 214, 215 and CC201 are closed or are attended by a person with the ability to close the door in the event of an emergency, and

b. Windows on the north, south, east and west sides of the penthouse, on the west wall of room 112A, on the south wall of room 101, on the east wall above door CX112, on the north wall of room 111, and on the south wall of corridor CC201A, on the north wall of 209W and 209E are unbroken and closed or are attended by a person with the ability to close the window in the event of an emergency, and

c. The interior partitioned walls of the offices and laboratories on the north, south, and east sides of the building, and the west interior wall which isolates the basement, first floor, and the west corridor of the second floor from the central bay area are intact and capable of performing as a non-pressure tight boundary, and

d. The roof covering the central bay area and second floor corridors CC201, CC212, and CC211 are intact and capable of performing as a non-pressure tight boundary.

CONTROL ROD - A plate fabricated with Boral as the neutron absorbing material which is used to establish neutron flux changes and to compensate for routine reactivity losses. This includes safety-type and regulating rods.

CORE - The portion of the reactor volume which includes the graphite reflector, core tanks, and control rods. The thermal column and shield tank duct are not included.

DELAY TIME - The elapsed time between reaching a limiting safety system setpoint and the initial movement of a safety-type rod.

DELAYED NEUTRON FRACTION - When converting between absolute- and dollar-value reactivity units, a beta of 0.00763 is used.

DROP TIME - The elapsed time between reaching a limiting safety system setpoint and the full insertion of a safety-type rod.

EXCESS REACTIVITY - That amount of reactivity that would exist if all control rods (control, regulating, etc.) were moved to the maximum reactive condition from the point where the reactor is exactly critical.

EXPERIMENT - Any operation, hardware, or target (excluding devices such as detectors, foils, etc.) which is designed to investigate non-routine reactor characteristics or which is intended for irradiation within the core region, on or in a beam port or irradiation facility and which is not rigidly secured to a core or shield structure so as to be a part of their design.

MEASURED VALUE - The value of a parameter as it appears on the output of a channel.

MEASURING CHANNEL - The combination of sensor, line, amplifier and output devices which are connected for the purpose of measuring the value of a parameter.

MOVABLE EXPERIMENT - An experiment where it is intended that the entire experiment may be moved in or near the core or into and out of the reactor while the reactor is operating.

OPERABLE - A component or system is capable of performing its intended function.

OPERATING - A component or system is performing its intended function.

REACTIVITY LIMITS - Those limits imposed on reactor core excess reactivity. Quantities are references to a Reference Core Condition.

REACTIVITY WORTH OF AN EXPERIMENT - The maximum absolute value of the reactivity change that would occur as a result of intended or anticipated changes or credible malfunctions that alter experiment position or configuration.

REACTOR OPERATING - The reactor is operating whenever it is not secured or shutdown.

REACTOR OPERATOR (RO) - An individual who is licensed to manipulate the controls of a reactor.

REACTOR SECURED - A reactor is secured when:

(1) It contains insufficient fissile material or moderator present in the reactor to attain criticality under optimum available conditions of moderation and reflection, or

(2) A combination of the following:

- a. The minimum number of neutron absorbing control rods are fully inserted or other safety devices are in shutdown position, as required by technical specifications, and
- b. The magnet power keyswitch is in the off position and the key is removed from the lock, and
- c. No work is in progress involving core fuel, core structure, installed control rods, or control rod drives unless they are physically decoupled from the control rods, and
- d. No experiments in or near the reactor are being moved or serviced that have, on movement, a reactivity worth exceeding the maximum value allowed for a single experiment or $0.763\% \Delta k/k$ whichever is smaller.

REACTOR SHUTDOWN - The reactor is shutdown if it is subcritical by at least $0.763\% \Delta k/k$ in the Reference Core Condition and the reactivity worth of all experiments is accounted for.

REACTOR SAFETY SYSTEMS - Those systems, including their associated input channels, which are designed to initiate automatic reactor protection or to provide information for initiation of manual protective action.

READILY AVAILABLE ON CALL - Applies to an individual who:

- (1) Has been specifically designated and the designation known to the operator on duty, and
- (2) Keeps the operator on duty informed of where he or she may be rapidly contacted (e.g., by phone, etc.), and
- (3) Is capable of getting to the reactor facility within a reasonable time under normal conditions (e.g., 30 minutes).

REFERENCE CORE CONDITION - The condition of the core when it is at ambient temperature (cold) and the reactivity worth of xenon is negligible, less than 0.23% $\Delta k/k$.

REGULATING ROD - A low-worth control rod used primarily to maintain an intended power level that does not have scram capability. Its position may be varied manually or by the servo-controller.

SAFETY CHANNEL - A measuring or protective channel in the reactor safety system.

SAFETY-TYPE ROD - A rod that can be rapidly inserted by cutting off the holding current in its electromagnetic clutch. This applies to safety #1, Safety #2, and shim-safety.

SECURED EXPERIMENT - Any experiment, experiment facility, or component of an experiment that is held in a stationary position relative to the reactor by mechanical means. The restraining forces must be substantially greater than those to which the experiment might be subjected by hydraulic, pneumatic, buoyant, or other forces which are normal to the operating environment of the experiment, or by forces which can arise as a result of credible malfunctions.

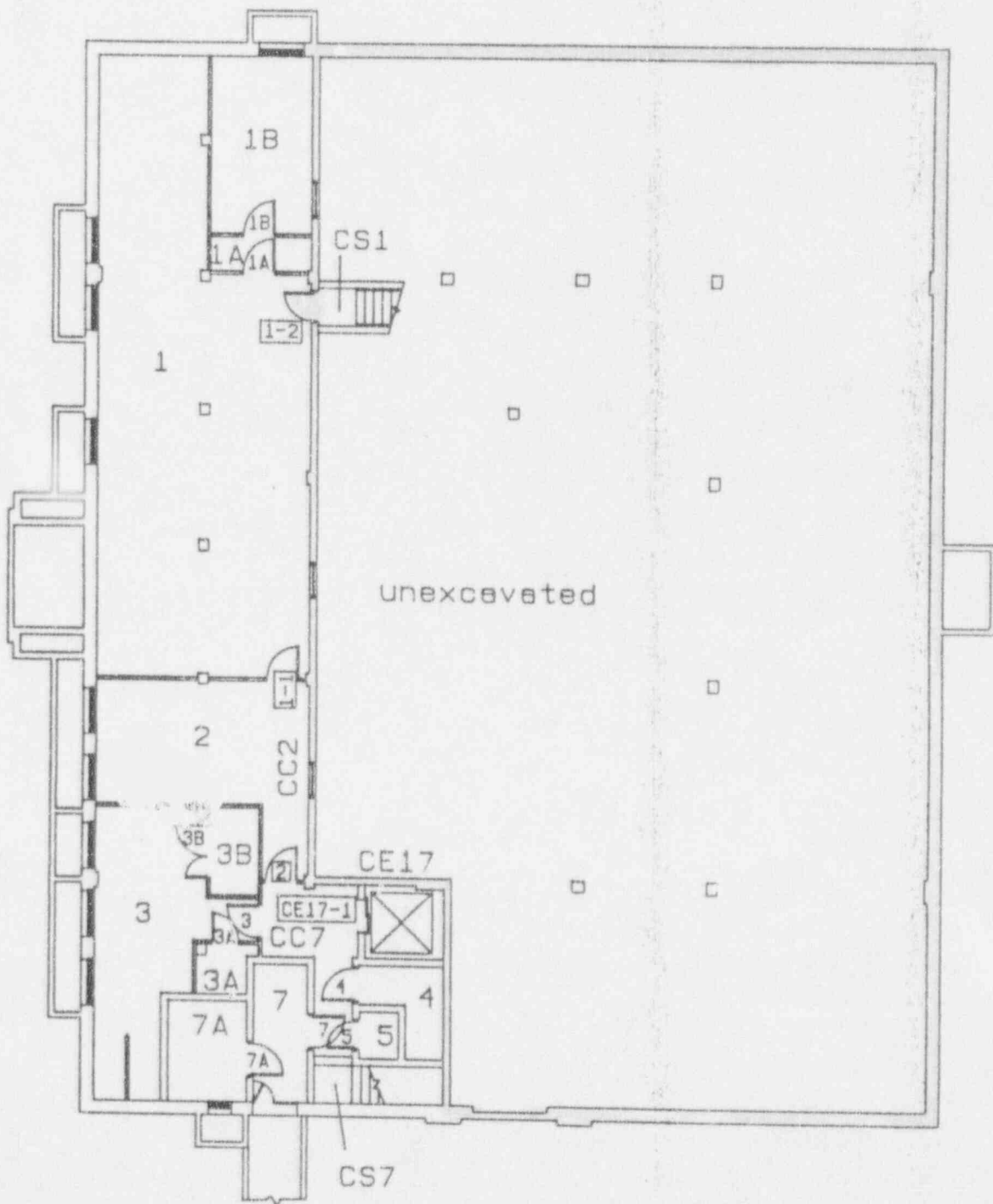
SENIOR REACTOR OPERATOR (SRO) - An individual who is licensed to direct the activities of a Reactor Operator (RO) and to manipulate the controls of a reactor.

SHALL, SHOULD, AND MAY - The word "shall" is used to denote a requirement, the word "should" to denote a recommendation, and the word "may" to denote permission, neither a requirement nor a recommendation.

SHUTDOWN MARGIN - The minimum shutdown reactivity necessary to provide confidence that the reactor can be made subcritical by means of the control and safety systems starting from any permissible operating condition although the most reactive rod is in its most reactive position, and that the reactor will remain subcritical without further operator action.

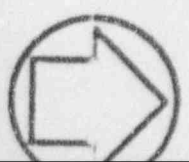
TRUE VALUE - The actual value of a parameter or variable.

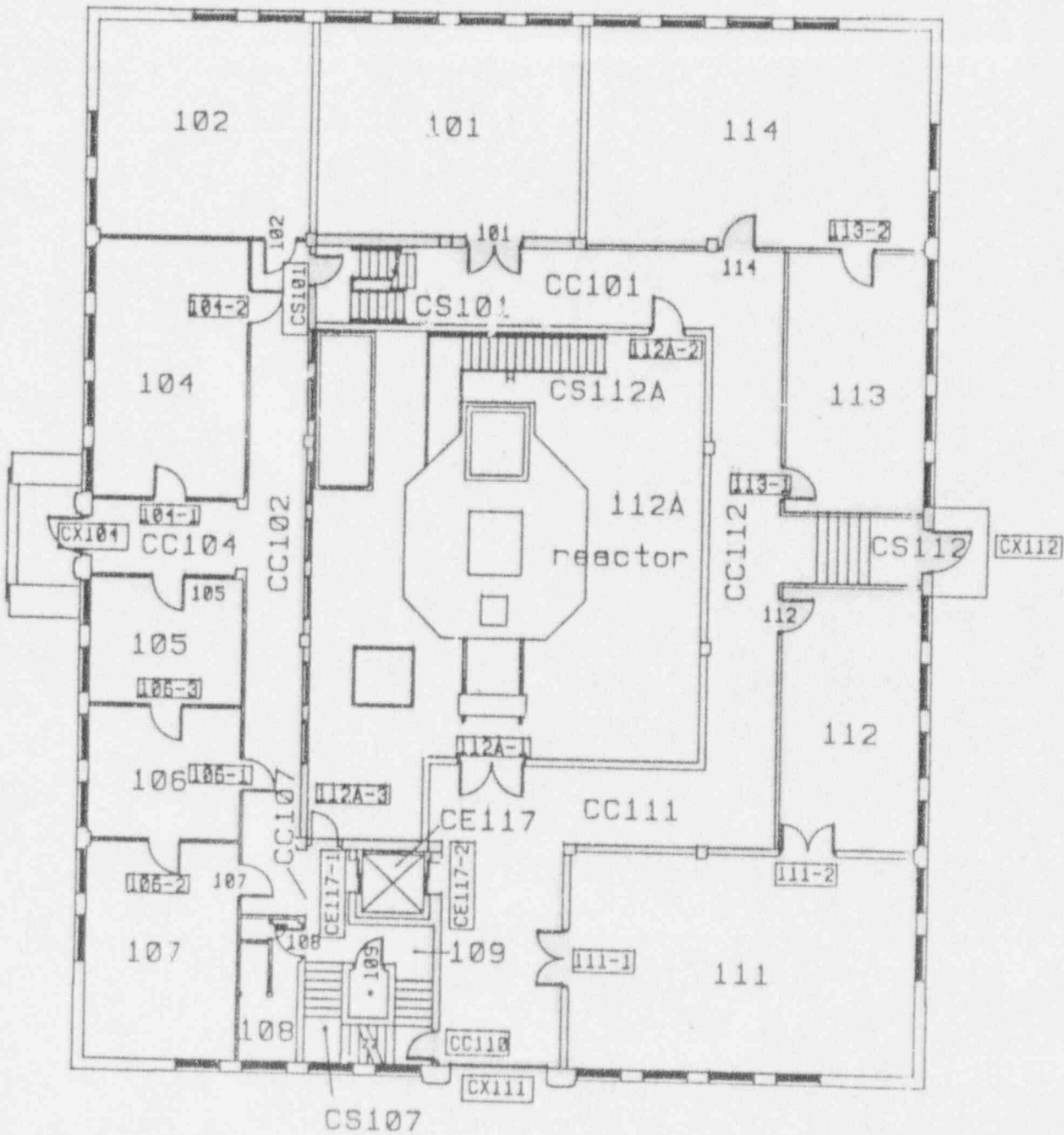
UNSCHEDULED SHUTDOWN - Any unplanned shutdown of the reactor caused by actuation of the reactor safety system, operating error, equipment malfunction, or a manual shutdown in response to conditions which could adversely affect safe operation, not including shutdowns which occur during testing or check-out operations.



BASEMENT FLOOR PLAN

1/2" SCALE

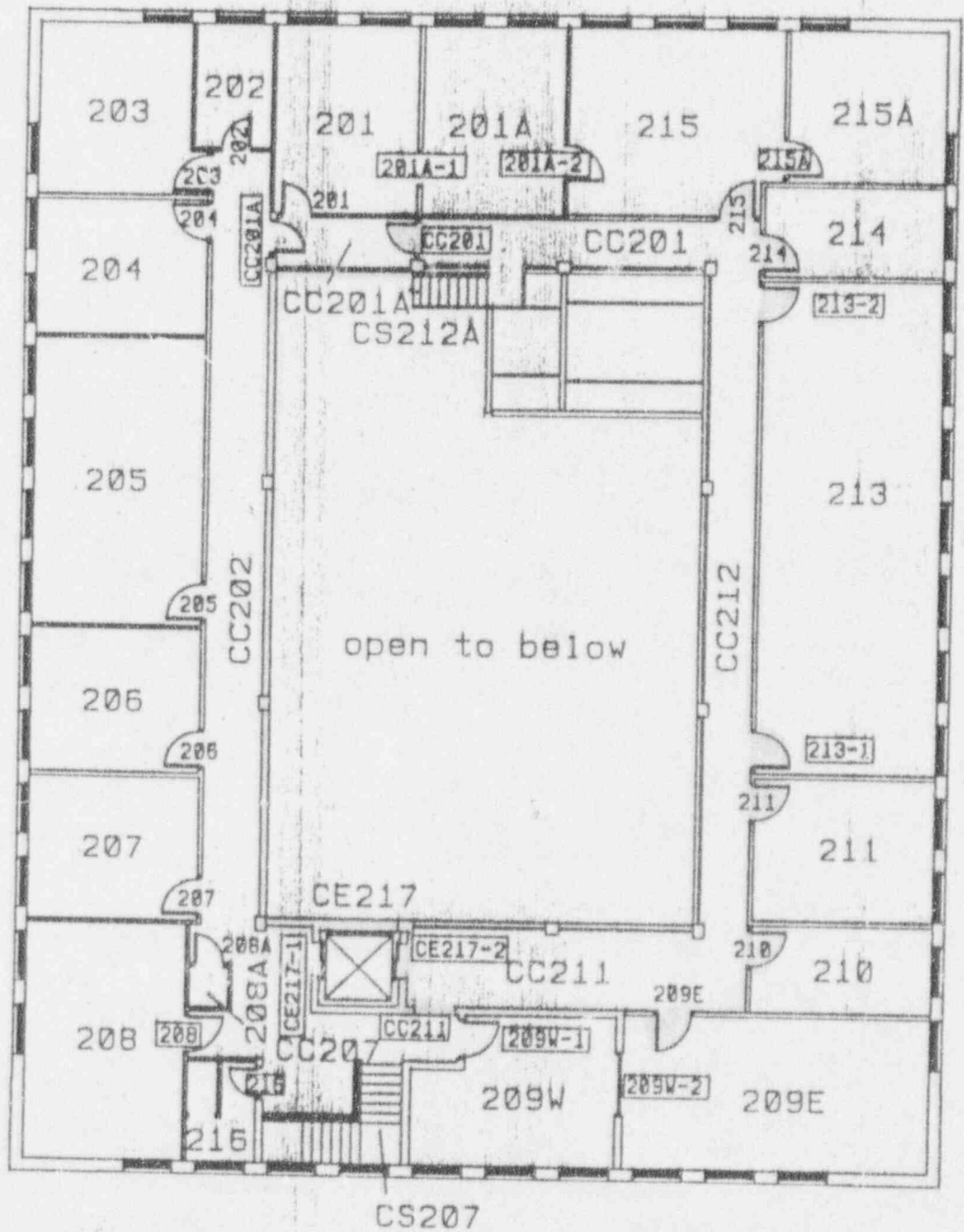




FIRST FLOOR PLAN

NO SCALE





SECOND FLOOR PLAN

