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STANDARDS COORDINATE SERVICE

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ABSTRACT: PROJECT ANS-1: PROPOSED CLASSIFICATIONS SYSTEM

The classification of reactors into groups of having similar characteristics from a hazards point of view has been attempted. Evaluation of reactor criteria using as a baseline hazards associated with the (a) maximum credible accident, (b) fission product release, (c) fission product content, (d) excess reactivity and its availability as well as other characteristics reveals a very complex system of operating conditions and variables. For reasons of direct simplicity, it appears that a reasonable reactor classification system can be based solely on (a) use, and (b) thermal power output. An endeavor is now underway to notify the classification system according to format used by the American Standards Association.

Proposed Reactor Classification System

I. Subcritical Assemblies

This group includes assemblies of fissionable materials in a manner such that the assembly will not become a self-supporting chain reaction.

II. Critical Assemblies

These are chain reacting assemblies which are designed and operated in a manner which makes them subject to major changes in basic components of the assembly — they are highly experimental.

(a) homogeneous
(b) heterogeneous

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III. <u>Lower Power Reactors</u> - Less than 1 kw

These reactors may be for research, training, or other uses (except critical assemblies) — no subclassification on use is considered necessary.

IV. <u>Medium Power Reactors</u> - 1 kw to 10 mw

A. Research, training, testing, and experimental power reactors which are subject to "non-routine" operation.

B. Reactors for production of heat, electricity, or radiation as a "routine" or "commercial" operation.

C. Mobile reactors.

Test
Research

V. <u>High Power Reactors</u> - greater than 10 mw

A. Research, training, testing, and experimental power reactors subject to "non-routine" operation.

B. Reactors for production of heat, electricity, or radiation as a "routine" or "commercial" operation.

C. Mobile reactors.

6 types of Power
Test Reactors

All power levels are expressed in terms of heat.

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