



PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

August 14, 1979

ERRATA SHEET

FOR

Critical Separation Between Subcritical
Cluster of 4.29 WT% ^{235}U Enriched UO_2 Rods
in Water With Fixed Neutron Poisons

Performed by

Battelle Pacific Northwest Laboratories

NUREG/CR-0073

Please replace (page 5) of NUREG/CR-0073 with the
attached corrected version. See attached memo for
explanation.

Division of Technical Information
and Document Control

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PDR NUREG
CR-0073 R PDR



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August 3, 1979

Mr. Donald E. Solberg
Fuel Cycle Research Branch
Division of Safeguards, Fuel Cycle & Environment
Office of Nuclear Regulatory Research
Nuclear Regulatory Commission
Mail Stop 1130
Washington, DC 20555

Dear Don:

Subject: Experimental Criticality Data for
Validation (Fin. No. B2094, TDO-777)

George Paris and Mike Schwartz of Pickard, Lowe, and Garrick, Inc. recently questioned the the ^{234}U content of the 4.29 wt% ^{235}U enriched fuels (NUREG/CR-0073 and NUREG/CR-0796). They found that their calculated keff values decreased by about 20 mk when the ^{234}U was included. Two additional isotopic analysis of this fuel has revealed that the original ^{234}U isotopic concentration is in error by a factor of ten. A check of the original spectragraphic data confirms that the lab report did contain a decimal error.

The average of all five spectragraphic analyses results in the isotopic distribution shown in the attached corrected p 5 of NUREG/CR-0073. I think we should have an errata sheet distributed for CR-0073. NUREG/CR-0796 does not suffer from the above problem in that the ^{234}U is ignored (treated as zero).

Sincerely yours,

S. R. Bierman
Project Manager

SRB:lt

Attachment

cc: RH Odegaarden
MH Schwartz
RM Westfall
File
1b

EXPERIMENTS WITH 4.29 WT% ^{235}U

ENRICHED UO_2 RODS IN WATER

As in the initial experiments in this research program, this second series of measurements were performed with aluminum clad UO_2 fuel rods immersed in water at a water-to-fuel volume ratio near optimum neutron moderation (25.400 ± 0.127 mm square lattice spacings). Each fuel rod consisted of 12.649 mm diameter pellets clad in 0.660 mm thick, 12.827 mm ID, aluminum tubing (Type 6061). The fuel length in each rod varied between 914.4 mm and 927.1 mm. The average mass of UO_2 per rod was 1203.38 ± 4.12 g and the pellet density was $94.9 \pm 0.5\%$ of theoretical density. The UO_2 fuel had a U assay of 88.055 ± 0.261 wt% and the following wt% isotopic composition:

^{234}U	0.022 ± 0.003
^{235}U	4.306 ± 0.013
^{236}U	0.022 ± 0.003
^{238}U	95.650 ± 0.018

The major chemical constituents of the water are given in Table I, and the composition of each neutron absorber material is given in Table II.

The neutron poison plates, when present, were positioned between each rod cluster at a fixed distance from the center rod cluster cell boundary, indicated as G in Figure 2. Each plate was parallel to the fuel rods as indicated in