WANL-TMI- 471

From: Engineering Mechanics

Date: January 29, 1963

Subject: Pull-Out Force Required to Remove
the Poison Wires from the Elements
Simultaneously

WESTINGHOUSE ASTRONUCLEAR LABORATORY

To: W. H. Esselman
M. J. Manjoine
J. Kenney, Jr.
W. H. Arnold
C. K. Kim
H. I. Kraig
File (5)
Library (2)
F. Frisch

NOTICE

This report was prepared as an account of work sponsored by the United States Government. Neither the United States nor the United States Energy Research and Development Administration, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights.

Experimental Results:

Based on experimental tests to obtain boundary conditions, the static pull-out (Approximately 10 ft./min.) load required to remove N number of poison wire rods per fuel element is equal to the area under the curve shown in Figure 1, integrated over the entire core area. By performing this calculation, the total force necessary to remove N number of poison wires per fuel element is

$$F_T = 312N$$

Where F_T = Total load to remove N number of poison wires, lbs.

N = Number of poison wires per fuel element.

Example: If 4 poison rods per element are used, then the force necessary to remove all the poison rods simultaneously is equal to

$$F_T = 312(4) = 1248 \text{ lbs.}$$

mbw

E. G. Igne
Engineering Mechanics

Approved:

M. J. Manjoine, Manager
Engineering Mechanics

DISTRIBUTION OF THIS DOCUMENT UNLIMITED

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

PULL-OUT ^{Force} vs. RADIUS
OR

POISON WIRE FROM FUEL ELEMENT
(BARE ^{Poison} WIRE & UNCOATED ELEMENT)

DISTRIBUTION OF THIS DOCUMENT UNLIMITED