Computer Code Abstract

REBUS-2

1. Name of Program: REBUS-2
2. Computer for Which Program is Designed: Any IBM OS/360 System.
3. Nature of Physical Problem Solved: Given one or more specified fuel supplies from outside the system, with or without fuel recycle, the code computes the equilibrium operating conditions of a fast reactor with or without burn time adjustment to a given discharge burnup, with or without fresh charge enrichment adjustment to maintain criticality, and with or without control adjustment at each flux time node. The non-equilibrium problem also handled through fuel recycle is not allowed.
4. Method of Solution: Numerical. It employs diffusion theory neutronics solutions.
5. Restrictions on the Complexity of the Problem: Fuel recycle is not allowed for nonequilibrium problem. Two-dimensional problems only.
6. Typical Machine Time: 3 to 20 min on IBM 360/195 depending on size of problem.
7. Unusual Features of the Program: It will handle both equilibrium and nonequilibrium problems using a number of core geometries including hexagonal mesh. It has automatic restart capability.
8. Related Programs: None.
9. Status: In use.
10. Machine Requirements: OS/360 with at least 400k core storage is required. Supplied sample problem requires approximately 620k to execute.
11. Programming Language: Fortran (99.9%). OS/360 Assembly Language (0.1%).
12. Material Available: (a) user's manual (225 pp.), (b) supplement to user's manual (11 pp.), (c) sample output, and (d) magnetic tape containing source code, sample data deck, JCL procedure, linkage editor control cards, and 2-file cross-section library. These are available from the Argonne Code Center.
13. Acknowledgement: This work was performed under the auspices of the U.S. Atomic Energy Commission.
14. *References*:

[1]"A User's Manual for the Reactor Burnup System, REBUS-2," FRA-TM-62, Argonne National Laboratory (Mar. 1974).

[2]J. HOOVER, G. K. LEAF, D. A. MENELY, and P. M. WALKER, "The Fuel Cycle Analysis System, REBUS," *Nucl. Sci. Eng.*, **45**, 52 (1971).

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