

Assessment Criteria for TRIGA Reactors Performances

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Abstract:

The international statistic data show that a number of 325 research reactors are now in operation. Their constructional and functional diversity is very large, a great share being represented by the TRIGA family reactors. Such reactors are now operating at: Tucson, Arizona - USA (1958); Austin, Texas - USA (1963); Belo Horizonte - Brazil (1960); Mainz - Germany (1975); Omaha - Veterans (1959); Heidelberg - Germany (1966); Bandung - Indonesia (1964/1971); Dalat Vietnam (1983); Pavia - Italy (1965); Rikkyo, Yokosuka - Japan (1961); Rome, Casaccia - Italy (1960); Seoul - Rep. of Korea (1982); Wienn - Austria (1962); Dasa Bethesda, MD - USA (1982); Pitesti, Arges - Romania (1979), etc.

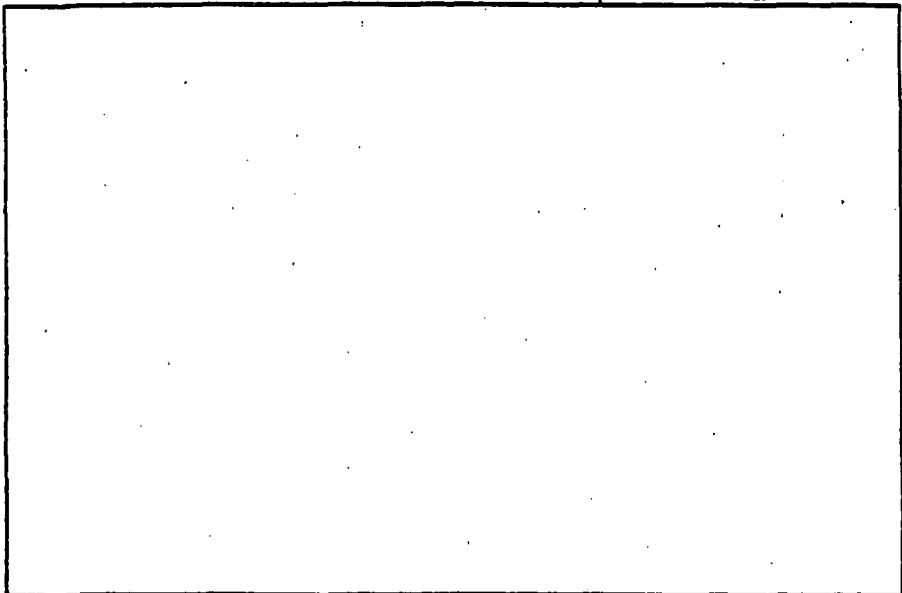
In the proposed paper, the author sets the evaluation criteria for the TRIGA-type reactors performances.

The treated phenomena can be described through functions of the type:

$$\varphi(N_1, N_2, N_3, \dots) = \text{constant}$$

Where, for example:

$$N_1 = FA^a \cdot B^b \cdot C^c \cdot E^d$$

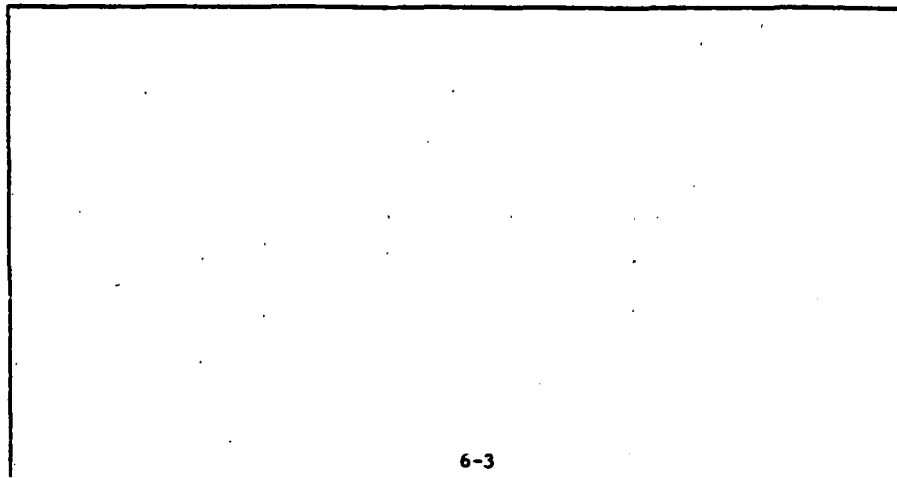


A Digital Data Acquisition and Display System for ITU TRIGA Mark-II Reactor

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Abstract:

In this study, a digital data acquisition and display system realized for ITU TRIGA Mark-II Reactor is described. This system is realized in order to help to the reactor operator and increase reactor console capacity. The system consists of two main unit, which are 80386 host computer and RTI-815F, Analog Devices, data acquisition card. RTI-815F is multifunction analog/digital input/output board that plugs into one of the available long expansion slots in the IBM-PC, PC/XT, PC/AT, or equivalent personal computer. It has 16 analog input channels for single-ended input signals or 8 analog input channels for differential input signals. But its channel capacity can be increased to 32 input channels for single-ended input signals or 16 input channels for differential input signals. RTI-815F board contains 2 analog output channels, 8 digital input channels and 8 digital output channels. In the ITU TRIGA Mark-II Reactor, 8 fuel temperature channels, 3 water temperature channels, 3 control rod position channels and 4 power channels are chosen as analog input signals for RTI-815F. Its digital outputs are assigned to cooling tower fan, primary and secondary pump reactor scram, control rod rundown. During operation, data are automatically archived to disk and displayed on screen. The channel selection time and sampling time can be adjusted. The simulated movement and position of control rods in the reactor core can be noted and displayed. The changes of power, fuel temperature and water temperature can be displayed on the screen as a graphic. In this system both period and reactivity are calculated and displayed on the screen.



Aspects of intellectual property related to
the TRIGA reactor in Romania

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Abstract:

A TRIGA - type research reactor has been operating in Pitesti since 1979. In Romania, the first research reactor - of the WWR-C type - has been operating since 1957. Both these reactors have contributed to the formation of well - trained specialists, whose works constitute an important intellectual and industrial property.

The Institute for Nuclear Research (formerly INT, then INPR) is the holder of several published patents, such as: Procedure for decontamination of water and primary circuits of irradiation devices; Reconditioning of ion exchangers; Nozzle for flow water gaugers; Oscillating electromagnetic pump; Facility for determining nuclear fuel burn-up; Portable monitor for contamination measurements; Cable joints with biological protection; Anti-seismic and thermal connection; Automatic facility for nuclear fuel irradiation testing; Method for determining power distribution specific for research reactor fuel elements; Tight end-fittings; Culling damage facility, etc. Many of these have been applied or can be applied or can be applied to reactors of the TRIGA family, already installed or under installation, or to other research reactors of other types.