

C618778 : MAJOR NUCLEAR TECHNOLOGY

KEY WORD: AREA MONITORING / RADIATION SURVEILLANCE / INTERFACE / RADIO COMMUNICATION

THANAKORN ARUNSIRI : DEVELOPMENT OF AN INTERFACING SYSTEM FOR RADIATION SURVEILLANCE USING A RADIO COMMUNICATION NETWORK. THESIS ADVISOR: ASSIST. PROF. SUVIT PUNNACHAIYA, THESIS CO-ADVISOR: ATTAPORN PATTARASUMUNT, 105 pp. ISBN 974-636-770-6.

The development of an interfacing system for environmental radiation surveillance using radio communication network is aimed to improve a way by which environmental radiation measurement is transmitted and reported from the regional area monitoring station network. This also includes an automatic warning of beacon status via the radio link network to the center of environmental radiation control when an abnormal radiation level is detected. The interfacing system was developed by simulating the EGAT radio link network, the NT 2612, and can be separated into two parts. The first part was for a mobile station which can manage the output data from the radiation measurement system in the standard form of RS-232, IEEE-488, BCD and analog signal. This was accomplished by modulating the signal in selected baud rates ranging from 150 to 9600 bps using an economical radio packet capable of identifying and recalling the station code number. The other part is the linking system between the output data and the microcomputer equipped with a software to manage and evaluate the data from 10 surveillance stations for convenient handing of data output, statistical analysis and transmitting warning signal. Data transmission was tested using a baud rate of 1200 bps and was found to contain no detectable error when digital signal was transmitted while analog signal transmission resulted in deviations of less than $\pm 0.003\%$

The development of this radio link system provides a future trend for the environmental radiation monitoring network for countries with nuclear power plants or neighboring countries needed to continuously monitor for any abnormal radiation level in the environment. In case that the radiation surveillance system detects a high level of radiation, a warning signal will be transmitted and appropriate actions may be immediately exercised to control impacts of radiation on environment and living things according to international guidelines.

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