A. Instrument

1501

CHANGE OF ENERGY RESOLUTION WITH A THROUGH HOLL NaI(Tl) DETECTOR.
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The purpose of quality control in RIA. Since 1976,we are checked photopeak countra -te,photopaek setting changes by standard source.Performance test estimate have been made of energy resolution,linearity and cou -nt efficiency.We are experienced crystal damage by yellow colored(detector 1). Energ -y resolution(%) are changed as follow:

	Detector(1)			Detector(2)			
Date	7606	7702	7711	7802	7902	8003	8103
I-125 pho	26%	30	39.2	23.2	25.9	26.2	28.2
sum	19	21	28.4	19.2	18.9	18.5	19.6
Co-57	14.9		32	12.2	13.0	13.0	14.1
Cs-137	7.9	9.7	20.2	7.4	7.4	7.6	8.0

Detector(1) used a year,energy resolution was increased 151%(rate) by I-125 and 256% by Cs-137.Detector(2) used 3 years,energy resolution rate is increased 20% by I-125 and 8% by Cs-137. Each rate of increased of two detectors energy resolution show a oppo -site tendency.These changes are expressed BISI ZAPPA formura(A+B/E),A is index of cry -stal change,Bis index of PMT change.Detect -or(2) is formularized 11+28/E at new,after three used,formularized 19+31/E., B-value changed remarkble compared detector(1). Now, energy resolution is increasing for detecto -r(2), we are assumed that the phenomenon is cause by PMT factor. We are conclued, energy resolution checks are very useful method for detector system, as same as HV check and temperature check.

1502

FILTERING EFFECTS OF SCINTILLATION PULSES USING FOUR TYPES OF BAND PASS FILTERS.
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This report represents further analyses of ^{137}Cs scintillation pulses using a 5 mm ϕ x 20 mm th. size of NaI (Tl) scintillator, R760 PMT of 1/2" ϕ with a rise time of 2.3 ns, 200 MHz preamplifier and a wider oscilloscope of 200 MHz. Four types of band pass filters (BPF); BPF_1, BPF_2, BPF_3 and BPF_4, each transmissible of wave range between 250 to 300 μm, 300 to 350 μm, 350 to 400 μm, and 400 to 450 μm respectively, which intervened between a scintillator and PMT. Pulse analyses showed that a single pulse excited by a single gamma ray photon was composed of several pulse components of about 20 ns duration and each pulse height showed the exponential decrease in height. The decay time of a single pulse was recorded in this experiment as about 250 ns. The slower components of a single pulse, i.e., lower frequency parts of a single pulse could be absorbed by a band pass filter. Only the maximum pulse height of a single pulse could be transmitted by BPF_1.

1503

COMPARRISON OF SINGLE WINDOW IMAGING WITH MULTIPLE WINDOW IMAGING IN Ga-67 SCINTIPHOTOS.
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In accordance with the acceptance of Ga-67, recent scintillation camera are designed to possess double or triple independent energy windows to take advantage of the 93-, 185-, and 300-keV photopeaks of this radionuclide. In a previous paper we studied physically the spatial resolution of triple window and noted that it was inferior to single window due to nonlinear response of the camera with respect to simultaneous use of multiple pulse-height analyzers (1). If the camera has linear respose, the advantage of multiple windows is obvious. However if the camera has nonlinear response, the performance of multipe windows is dependent on the trade-off between increased count density and decreased spatial resolution. This paper visually evaluates the spatial resolution of single window compared with multiple windows in terms of lesion detectability for spherical hot lesions with uniform background activity. The visual evaluation of phantom images by five persons shows that a triple window provides higher lesion detectability than single, 93-keV peak window. The advantage of triple window is due to maximum counting efficiency. If the nonlinear response of multiple windows is little, triple window is recommended. (1) J Nucl Med 22:169-176, 1981

1504

THE FUNDAMENTAL CAPABILITY AND SOME DIRECTIONS FOR USE OF MULTIPURPOSE GAMMA CAMERA SYSTEM.
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A newly designed gamma camera system which has the ability of conventional imaging, whole body imaging and RCT imaging was introdused into Division of nuclear medicine, Chiba Cancer Center Hospital. This device is made up of two opposed gamma cameras which are supported by a gantry and rotate the axisis of the patient, a sliding bed and data processer for exclusive use of nuclear medicine.(Toshiba GCA-405 and GMS -80A) By using two opposed gamma cameras, we can obtain the three dimensional conception of location of activity in such an examination as RI angiography and mesure the whole body distribution of radionuclide easily. By phantom study, we got a result that the difference between sensitivities of two gamma cameras gave passable effect on RCT images. We think the device to have the ability of various inspections.