

MAXIMUM GROUND ACCELERATION ESTIMATED IN THE EPICENTRAL AREA OF THE  
OHITA EARTHQUAKE OCCURRED IN KYUSHU, JAPAN, ON APRIL 21, 1975

by  
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SYNOPSIS

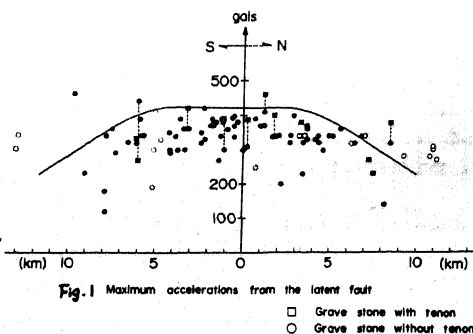
Estimation of the maximum acceleration in the epicentral area of the Ohita Earthquake was carried out by means of the field observations on the overturned gravestones. It was deduced with high reliability that maximum ground acceleration of the value of 420gals must have been brought about everywhere in the epicentral area which showed the dimensions of 20km×7km.

MAXIMUM GROUND ACCELERATION AND THE EXTENT OF THE EPICENTRAL AREA

The Ohita Earthquake (M=6.4) was accompanied by the complete destruction of the modern 4 storied Kuju Lakeside Hotel and by large damage to many wooden houses, roads and other facilities. For the purpose of finding out the maximum ground acceleration that must have been brought about in the meizoseismal area, detailed field investigations were carried out covering whole damaged area. In the damaged area there were great many graveyards in which it was seen that many gravestones have overturned while some others were not overturned. Japanese style gravestone is a form of simple rectangular parallelepiped, standing upright freely on the flat basement stone. Such is the situation that it may be assumed that the overturning of a gravestone, having the dimension of the side length B and height H, can take place by the horizontal acceleration  $\alpha$  when  $\alpha \geq (B/H) \times g$ , where g is the acceleration of gravity.

Estimation of maximum ground accelerations by means of the overturned gravestones have been carried out in the case of many past destructive earthquakes in Japan. However, the maximum accelerations deduced in this way have been considered to give somewhat unreliable figures. The main reason of this unreliability is caused by the fact that the overturning of the gravestone is sometimes not caused by the horizontal acceleration but by the sliding and/or dancing of the gravestones on the flat base stone so that the gravestone comes to fall down from the edge of the base stone. In the case of the Ohita Earthquake, there found, however, gravestones having a tenon at the bottom face so that it can make no sliding nor dancing on the base stone. By this reason the maximum acceleration of 420gals obtained in the case of the Ohita Earthquake gave definitely quite a reliable value of maximum acceleration. The maximum acceleration obtained from the field observation is shown in Fig.1.

As will be seen in the figure it may be pointed out two important results. (1) Maximum acceleration is estimated at 420gals in the epicentral area. (2) The extent of the epicentral area was about 20km×7km and in which area it was seen that the maximum ground acceleration was almost uniform throughout the whole area.



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