

**REPORT ON THE PRELIMINARY INVESTIGATION OF ALLEGED EARTH TREMORS IN
ODO ONA ELEWE, IBADAN**

SUBMITTED TO



**THE NATIONAL TECHNICAL COMMITTEE ON
EARTHQUAKE PHENOMENA (NTCEP)**

**NATIONAL AGENCY FOR SCIENCE AND ENGINEERING
INFRASTRUCTURE (NASeni)**

**FEDERAL MINISTRY OF SCIENCE AND TECHNOLOGY
ABUJA**



**RESEARCH TEAM
DEPARTMENT OF GEOLOGY
UNIVERSITY OF IBADAN
IBADAN, NIGERIA**

2002

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EARTH TREMORS IN ODO ONA ELEWE, IBADAN

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INTRODUCTORY OVERVIEW

Arising from an article on "Earth tremors in Ibadan" published in the Sunday Tribune of 19 May 2002, page 32, the NASENI (NTCEP) requested for an investigation of the incidences so reported. However, it is pertinent to note that an earth tremor can be regarded as a mild form of earthquake which can be felt as feeble shock or vibration of the earth, usually with little or no displacement of rocks along faults or dislocations.

Consequently, in view of the possible negative effects and the urgency of the assignment, a team of investigators including petrologist, structural geologist and geomorphologist, was assembled to carry out the preliminary studies, with the aim of verifying and ascertaining the nature and impact of the purported occurrences.

GEOLOGICAL FEATURES OF IBADAN AREA

Geomorphological Setting

Odo Ona Elewe area is in the southeastern part of Ibadan; that is, within the Oluyole Local Government Area of Oyo State. The district is named after the Odo Ona river which traverses the area in a north-south direction. The majority of the distributary streams generally form a dendritic pattern, with easterly and westerly flow

directions. The area is generally undulating, with a few isolated hilly locations of migmatitic rocks. However, a major north-south trending ridge is prominent in the extreme western part.

Petrological Characteristics

The area lies within the Precambrian basement complex of southwestern Nigeria, and is characterized by the presence of migmatitic gneisses and schists, quartzites and quartz schists, with intrusive pegmatites and aplites. The rocks generally show foliation trends and fabrics that are northerly. Shear zones are commonly infilled by the intrusive bodies. Joints are common in the rocks, particularly the quartzites and quartz schists.

Weathering Profiles

In the area, the rocks are variedly weathered with development of lateritic profiles and soils. The overburden depths generally vary from zero where the bedrocks are exposed, to about 10 metres in locations with well developed profiles. The transition zones to the bedrocks, are usually composed of partially weathered fragmented rocks and saprolitic materials.

OBSERVATIONS AND FINDINGS

Besides the geological and geomorphological features already highlighted, other environmental indices were observed and noted, during the investigation.

Anthropogenic Activities

Also, hand-dug deep wells were found to be the main sources of water. These commonly penetrate the weathered profiles into the bedrocks that are often blasted. In addition, quarrying activities are quite active in the southern part of the district, which involve more substantial use of explosives and blasting.

Nature of the Tremors

In most localities beyond the Bota and Celestial Bus Stop of Odo Ona Elewe, there was generally the feeling of non observation of any recent tremor. On the other hand, within the latter parts, a sizable proportion of people claimed to have experienced shocks at varying frequency, time, duration and effects. However, the most recent was about early May, 2002.

CONCLUSIONS AND RECOMMENDATIONS

It is obvious that the Odo Ona Elewe area has experienced shocks which are possibly attributable to natural or artificial factors.

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However, considering the frequency as claimed by the inhabitants and the localized nature of the incidences (ca. 4km²), the latter explanation may be more tenable. That is, the events are better linkable to the pronounced blasting activities in the locality; though, geological causes cannot be overlooked.

Consequently, it is desirable to execute detailed survey, including the administration of questionnaire to ascertain the extent, nature and effects of the experiences, for adequate documentation and evaluation. In this light, an appropriate 15 items questionnaire has been prepared, and the administering process initiated, accordingly. Further geological studies involving structural analysis of the rocks exposed at the surface and within the deep wells, are of necessity.

From the sociological perspective, it is also desirable that the people of the area and similar environ be educated on the need to control blasting activities. Similarly, instrumental measurement, specifically the establishment of seismograph station is of priority, as to mitigate against subjectivity in the monitoring and assessment of such experiences.

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HOWEVER, CONSIDERING THE FREQUENCY AS CLAIMED BY THE INDIVIDUALS

Research Team

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