

URS/JOHN A. BLUME & ASSOCIATES, ENGINEERS

130 JESSIE STREET (AT NEW MONTGOMERY)
SAN FRANCISCO, CALIFORNIA 94105
TEL: (415) 397-2525
CABLE: BLUMENGRS

NEW YORK
SAN FRANCISCO
WASHINGTON, D.C.
DALLAS
SEATTLE
DENVER
KANSAS CITY
HONOLULU
NEW ORLEANS
SAN MATEO
HONG KONG
BOLIVIA

EFFECTS OF MAY 1980, MAMMOTH LAKE EARTHQUAKES IN SOUTHERN NEVADA

K. K. Honda and M. I. Towbin

A series of earthquakes in the Mammoth Lake area beginning May 25, 1980, was perceived by people in the southern Nevada region as far south as Las Vegas. Interviews and investigations were conducted to ascertain the effects in three areas: Scotty's Castle, Death Valley, California; Tonopah, Nevada and Las Vegas, Nevada.

Scotty's Castle: The castle complex is located in the north end of Death Valley, approximately 140 km southeast of the epicenters. There are approximately 10 buildings and the construction materials consist of reinforced concrete, wood frame, and combinations of reinforced concrete and wood frame which were built between 1925 and 1931, although a few were never completed.

No apparent damage was observed on the buildings, although motion of the larger earthquakes on the 25th, 26th, and 28th were distinctly perceptible. A park ranger who maintains the complex and who gives guided tours of several buildings described one of the earthquake motions as quite strong and noticeable. About 20 tourists also perceived the motion, but apparently the motion was not alarming. A 1,000 pound chandelier on an approximately 10 foot long chain swung back and forth at an arc of about two feet. Potted plants on the sides of the building also shook noticeably. Also, the earthquake motion caused the building to creak quite noticeably.

Tonopah: The town of Tonopah is situated approximately 170 km southeast of the epicenters. It is an old mining town and presently a tourist stop between Reno and Las Vegas. The building construction varies in age as well as material.

There appears to be a significant variation in the report of motion perception. None of the Sheriff's deputies nor fire department personnel on duty apparently felt the motion. However, several residents and hotel clerks did feel the motion. Swinging of hanging plants and pictures were reported by one resident. A hotel clerk reported that a cash box fell off the desk. There is one unconfirmed report of damage in an office in one of the hotels, a slight crack in the wall.

The variation in motion perception may be explained by the varied foundation conditions in which these buildings are constructed; hard rock, shallow alluvium and mine tailing piles.

Las Vegas: Las Vegas is located approximately 330 km southeast of the epicenter. No report of motion was made by those on the ground, although there were reports of motion perception from people on the upper levels of highrise buildings. A ground motion record of the earthquake (unfortunately the motion on two horizontal components exceeded the recording limits) indicate a peak ground acceleration and displacement of 0.003g and 0.6cm, respectively.