

LEHMAN CAVES NATIONAL MONUMENT, NEVADA

The Lehman Caves National Monument is situated within partially surveyed Sec. 10 and in unsurveyed Secs. 9, 15 and 16 in T. 13 N., R. 69 E., M.D.M., Nevada, plat approved Feb. 17, 1879. All of Homestead Entry Survey No. 149, plat approved August 27, 1918, is located within the reservation boundaries except a small portion at the southeast corner of the entry survey.

Survey was commenced October 12, 1935 and executed with W. & L.E. Gurley solar transit, serial number 262669, model 1926, constructed in conformity with the standard specifications of the General Land Office. The horizontal circle has a diameter of $5 \frac{3}{4}$ inches with two double verniers placed opposite to each other; the vertical circle has a diameter of 4 inches with one double vernier; each vernier reads to single minutes of arc. The instrument is also equipped with an improved Smith solar attachment mounted on the east standard; the radius of the declination arc is 4 inches; the radius of the latitude arc is $2 \frac{1}{2}$ inches and each arc has a vernier reading to single minutes. This instrument was approved for use on this assignment, conditional upon satisfactory field examination and adjustments, by the district cadastral engineer on October 1, 1935.

The directions of all lines were determined by deflection angles, checked by multiple repetitions, from a meridian which is described below. Frequent references were made to this meridian to maintain accuracy of alignment. Measurements were made with a Lallie steel tape, 8 chains in length, graduated every link for the first 100 lks., and thereafter at intervals of 10 lks. The tape was tested by comparison with a Lufkin standard steel tape 1 chain in length and found correct. The measurements were made on the slope and the vertical angle of each interval ascertained by use of transit or improved type clinometers in good adjustment; the slope distances were properly reduced to horizontal equivalents which are entered in the field note record.

The data furnished gives the geographic position for the cor. of secs. 10, 11, 14 and 15 in T. 13 N., R. 69 E., M. D. M., Nevada as follows: latitude $39^{\circ} 00' N.$, longitude $114^{\circ} 12' W.$ Correct local mean time was computed from radio signals received during the night of October 11th.

October 12, 1935, at a permanent reference monument, a brass disc mkd. U.S.D.I. - NPS, and set in a concrete monument on line 2-3 of H.E.S. 149, in latitude $39^{\circ} 00' N.$, and longitude $114^{\circ} 13' 30'' W.$, at 6h 42.5m a.m., l.m.t., I make an hour angle observation on Polaris west of the meridian, making six observations, three each with the telescope in direct and reversed positions, reading the deflection angles from the west edge of the trunk of a tree on the skyline about one mile distant, west to Polaris.

Mean deflection angle to reference point..... $25^{\circ} 29'$
Azimuth of Polaris at mean time of observation..... $1^{\circ} 20'$

True bearing of reference point..... $N. 24^{\circ} 09' E.$

This meridian determination is in agreement with the record bearing of line 2-3 of H.E.S. No. 149

DEPENDENT RESURVEY OF A PORTION OF THE EAST AND SOUTH BOUNDARIES
OF SEC. 10 IN T. 13 N., R. 69 E., M.D.M., NEVADA, AS ORIGIN-
ALLY SURVEYED BY W.E.N. MCGILL, U. S. DEPUTY SURVEYOR IN
1878 UNDER CONTRACT NO. 83.

At the cor. of secs. 10, 11, 14 and 15, which is mkd. by the original rock, a quartzite $6 \times 8 \times 12$ ins., mkd. 4 notches on S. and 2 notches on E. edges, firmly set in a mound of earth and stones, and with a mound of stone south,

Set an iron post, 3 ft. long, 2 ins. diam., 15 ins. in the ground to solid rock, with the original corner rock deposited at the base, and in a large mound of stone to top, for cor. of secs. 10, 11, 14 and 15, with brass cap mkd.