



## *Supplemental road log 2: Black Rock to Ojo Caliente*

Spencer G. Lucas and Orin J. Anderson  
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*This is one of many related papers that were included in the 1989 NMGS Fall Field Conference Guidebook.*

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Samples of obsidian west of the mine were dated at 3.3 my by potassium-argon methods (Bassett et al., 1963a, b).

**Retrace route** to The Inn in Grants. **2.8**

- 12.8 Milepost 5. Zuni Mtns at 12:00. **0.2**
- 13.0 **Cattleguard**. **0.8**
- 13.8 Milepost 4. **0.3**
- 14.1 **Grants** city limits. Zuni Mtns at 10:00–12:00. **2.4**

- 16.5 **Turn right** onto Roosevelt at stop light. **0.4**
  - 16.9 **Stop sign**. Keep straight. **0.1**
  - 17.0 **Turn left** on 2nd Street (one way). Black Mesa at 3:00 and Zuni Mtns at 12:00. Pass Grants High School on right. **0.9**
  - 17.9 Traffic light. **Turn left** onto Santa Fe Ave. **2.0**
  - 19.9 Enter the parking lot of The Inn.
- End of Supplemental Road Log 1.**

## SUPPLEMENTAL ROAD LOG 2, BLACK ROCK TO OJO CALIENTE

SPENCER G. LUCAS and ORIN J. ANDERSON

### Mileage

- 0.0 **Continue straight** (W) toward Zuni Pueblo from intersection of NM-53 with paved road to fairgrounds (N) and Corn Mountains (S), mile 140.8 of second-day road log. **0.8**
- 0.8 Enter **Zuni Pueblo**. Zuni Pueblo is the center of the Zuni people, farmers and shearherders noted for their dances and arts and crafts, especially the making of turquoise jewelry. The name Zuni is believed to be a Spanish adaptation of a Keresan word of unknown meaning. The pueblo was one of the legendary "Seven Cities of Cibola" sought by the Spanish conquistadores. **0.4**
- 1.2 School crossing; Zuni High School to left. **0.5**
- 1.7 Houses on right are built from sandstone slabs quarried from local outcrops of the Rock Point Mbr of the Chinle Fm. **0.1**
- 1.8 Zuni tribal offices on right. **0.3**
- 2.1 Four-way stop; **turn left**. **0.2**
- 2.3 **Bridge** over Zuni River followed by stop sign across from Halona Plaza. **Turn right** and **proceed west**. **0.2**
- 2.5 Road enters from right; **continue straight**. **0.5**
- 3.0 End of paved highway (you are now on Zuni Pueblo Highway 2). **2.3**
- 5.3 Gravel pit at 10:30 in thick, Pleistocene(?) gravels. **1.2**
- 6.5 Road forks; **go straight**; right fork goes to Tekapo, a former trading point on NM-53. Note red beds of the Chinle Fm on right beneath alluvium. **0.5**
- 7.0 At 9:00 note strata of the Petrified Forest Mbr of the Chinle Fm underneath the Rock Point Mbr. **0.8**
- 7.8 Good view of mudstones and sandstones of the Chinle Fm on right. **0.7**
- 8.5 Road is now on a stripped surface developed in the Sonsela Ss Bed of the Petrified Forest Mbr of the Chinle Fm. **2.3**
- 10.8 Note Triassic Chinle sandstones on left. **1.1**
- 11.9 Owl Rock Mbr of Chinle Fm exposed on mesa at 9:00 and along road for next 0.9 mi. **3.2**

- 15.1 Bridge; elevation 6244 ft. **1.0**
- 16.1 Sonsela Ss at 9:00. **0.1**
- 16.2 Enter **Ojo Caliente**. **STOP 1**, to examine excellent exposures of Sonsela Ss on left (Fig. S2-16.2). Here, the Sonsela is about 42 ft of chert-pebble conglomerate and coarse-grained, trough crossbedded sandstone overlying purple mudstone. The Sonsela Ss Bed of Kiersch (1955) and Akers et al. (1958) covers an area of 24,000 mi<sup>2</sup> in northeastern Arizona and northwestern New Mexico. It represents an extensive network of coalesced channel bodies of north and northeasterly flowing rivers during the Late Triassic (e.g., Poole, 1961). Ojo Caliente (Spanish, "hot spring"), curiously, is not near a hot spring. After stop, **continue S** through the village of Ojo Caliente. **0.3**
- 16.5 Bridge over Plumasano Wash; road forks; **proceed left**. **0.3**
- 16.8 Note extensive bench to N (left) formed by Sonsela Ss. **0.3**
- 17.1 Sharp bend to right in road. **0.6**



FIGURE S2-16.2. The Sonsela Sandstone Bed of the Chinle Petrified Forest Member at Ojo Caliente.

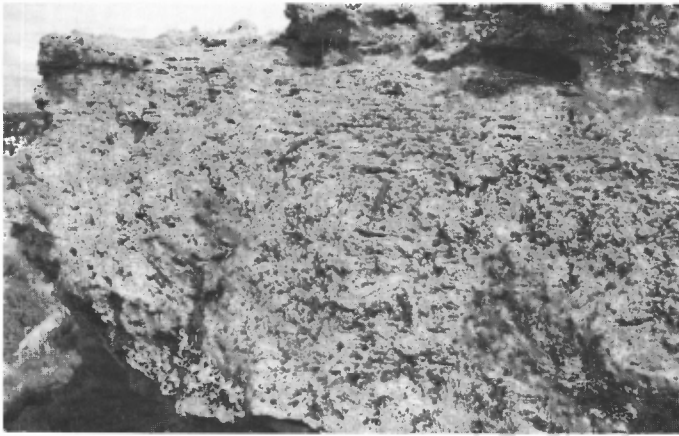


FIGURE S2-18.7. Thick travertine at Stop 2.

- 17.7 Road forks; **turn right** toward Rainbow Spring. **0.1**
- 17.8 Cistern on right marks Rainbow Spring. This is not a hot spring. **0.4**
- 18.2 Crest of hill provides good view of Sonsela Ss at 3:00. **0.1**
- 18.3 At 4:00 at base of hill is Sacred Spring; Ojo Caliente Reservoir at 2:00 to west of hill. Red beds forming slopes at 9:00–10:00 are Chinle Fm. **0.4**
- 18.7 **STOP 2**; climb hill to left and examine the 20+ ft of early (?) Pleistocene travertine preserved here (Fig. S2-18.7). At this locality we are near the northern end of the Atarque monocline. Triassic strata dip 65° and strike

N45°W. After the stop, turn around and **return to the main unpaved road.** **0.7**

- 19.4 Road to right; **stay left.** **0.3**
- 19.7 Intersection with main road; **turn right.** **0.1**
- 19.8 Note mesa edge at 10:00 exposing Sonsela Ss over mud-rock of the lower Petrified Forest Mbr of the Chinle Fm. **0.4**
- 20.2 Road is on the basal, “mottled strata” of the Chinle Fm. **0.8**
- 21.0 **Cattleguard.** **0.2**
- 21.2 Road forks; **go left.** **0.2**
- 21.4 Road forks; **go left.** Ahead is a reclaimed quarry that was developed in the Permian San Andres Fm for road metal and closed in 1982. **0.3**
- 21.7 Road is on limestone of the Permian San Andres Fm. **0.2**
- 21.9 **STOP 3** at crest of hill to examine fossiliferous (brachiopods) limestone of San Andres Fm (Darton, 1928; Kues and Lucas, this guidebook) and discuss structure of Atarque monocline. Structural relief along the monocline is at a maximum here, and probably exceeds 2000 ft. The controlling fault may cut the surface here as Darton illustrated (Fig. S2-21.9), however, immediately to the south and for essentially the entire length the Atarque is a drape fold (monocline) over a basement reverse fault (Anderson, 1987). The uppermost San Andres strata exposed here are extremely fossiliferous (Darton, 1928, p. 142; Kues and Lucas, this guidebook). They contain a bivalve- and cephalopod-dominated fauna typical of the Kaibab Ls in Arizona.

**End of Supplemental Road Log 2.**

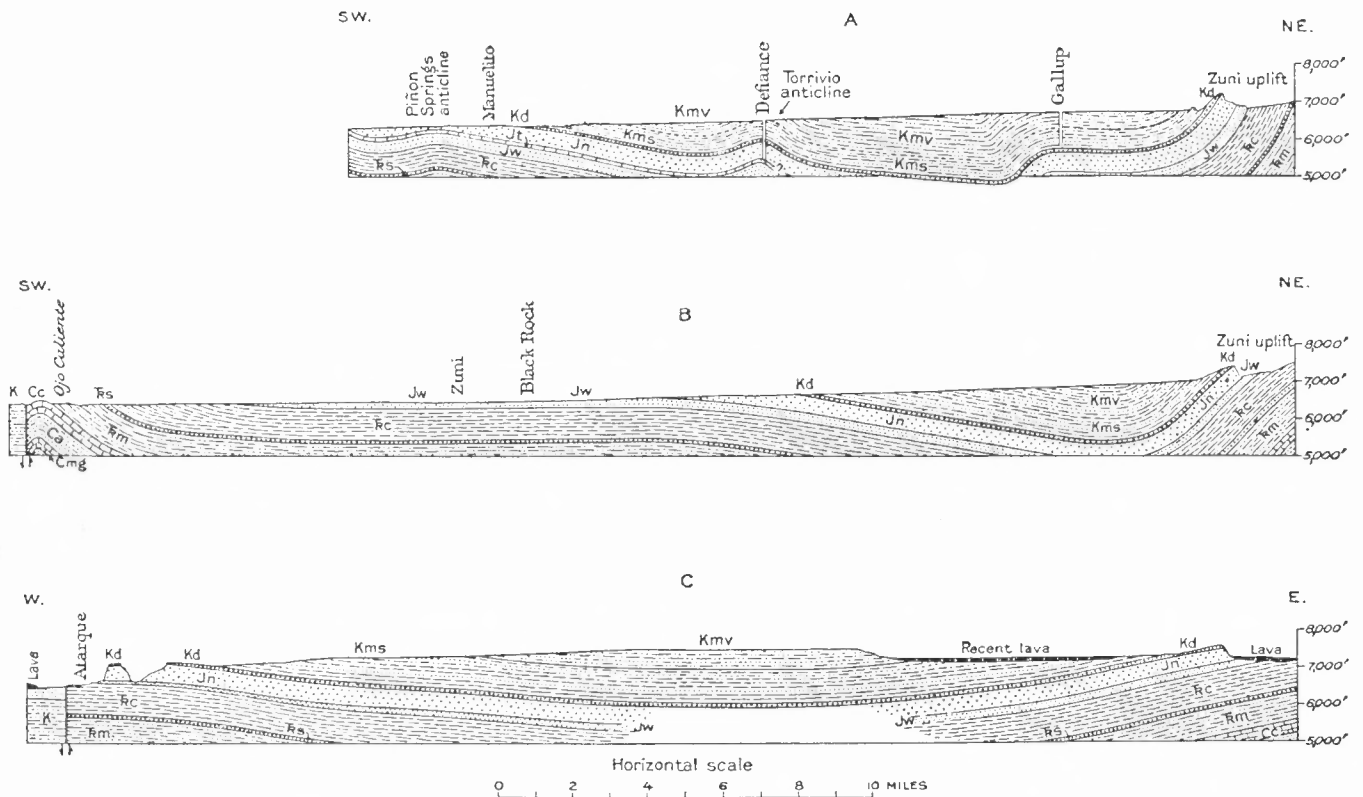


FIGURE S2-21.9. Cross sections across the Gallup-Zuni basin (from Darton, 1928).