# Site Description

**Cactus Flat**

(updated 2012)

Geologic setting: The Cactus Flat basin of Nye County covers 403 square miles (Rush, 1970), much of it within the Nellis Air Force Range boundary. The Mellan Mountain area, southern Cactus Flat, was prospected for gold in the 1930s. A minimal amount of gold-silver ore was recovered from shear zones of ash-flow tuff and shale. Silicification of wall rock is found throughout the tuff, and in certain areas chalcedonic silica is common. _____ suggests that veins were originally opal and recrystallized to chalcedony, with a deposition temperature of 180°C or less. They write: "One vein near the Mellan townsite has a corrugated or rippled surface that is likely produced by deposition of silica gel during hydrothermal fluid streaming." Opal deposition probably occurred at shallow depth, but no hot-spring sinter deposits have been noted in rock exposures.

Geothermal features: The Cactus Flat basin has relatively sparse data, but drill holes and water wells indicate a thermal anomaly, or perhaps multiple individual anomalies. Near Mellan Mountain, two warm wells measure 26.7°C (T2S R49E 22) and 25.0°C (T2S R47E 7). Their respective geothermometers are high, at 86.7° and 162°C (Ca-Na-K), and 132° and 119°C (quartz). Similar geothermometry has been found in cold wells between T1N-1S R47E, south of Coyote Hole Spring: the three wells average 80.7 ± 4.5°C (Ca-Na-K) and 119 ± 2.2°C (quartz).

Gradient hole data exists for only the extreme NE Cactus Flat, and SW along the Cactus Range (Penfield et al., 2010). None encountered temperatures greater than 18°C, possibly due to shallow drilling depths (30-60m).

***Coyote Hole Spring***: At the north end of Cactus Flat, near Stone Cabin Valley, Coyote Hole Spring has a temperature of 29.4°C (Garside and Schilling, 1979, no. 223), and estimated reservoir temperatures of 55°C (Ca-Na-K; Fournier, 1979) and 40°C (chalcedony; Fournier, 1977). Trexler,

# Site Description

Koenig, Flynn, and others, 1981 (Table E2) suggested the reported temperature could be due to solar heating. This spring is one of several known warm springs with this name (another is in Railroad Valley, Nye County).

Leasing information:

N/A

Bibliography:

Fournier, R.O., 1977, Chemical geothermometers and mixing models for geothermal systems: Geothermics, v. 5, p. 41-50.

Fournier, R.O. and Potter, R.W., 1979, Magnesium correction to the chemical geothermometer: Geochimica et Cosmochimica Acta v. 43, p. 1543-1550.

Garside, L.J., and Schilling, J.H., 1979, Thermal Waters of Nevada: Nevada Bureau of Mines and Geology Bulletin 91, 163 p.

_____, ___, Mellan Mountain District description http://gary13.nbmg.unr.edu/miningdistrictproject2/DistrictsDetail.aspx?OBNum=11285

Penfield, R., Shevenell, L, Garside, L., and Zehner, R., 2010, *Nevada Geothermal Resources*, Nevada Bureau of Mines and Geology Map 161, University of Nevada, Reno.

Rush, F.E., 1970, *Regional Ground-water Systems in the Nevada Test Site Area: Nye, Lincoln, and Clark Counties, Nevada*, Water Resources – Reconnaissance Series Report 54, U.S. Geological Survey, p. 1-25. [http://images.water.nv.gov/images/publications/recon%20reports/rpt54-nevada_test_site.pdf]

# Site Description

Trexler, D.T., Flynn, T., Koenig, B.A., and Bruce, J.L., 1981, Nevada Resource Assessment Program, 1980: in Ruscetta, C.A., etal., Editors, Geothermal Direct Heat Program, Glenwood Springs Technical Conference Proceedings: Papers Presented; State Coupled Geothermal Resource Assessment Program Report, v. 1, U.S. Department of Energy Report DOE/ID/12079-39; ESL-59, p.205-227, Avaliable at University of Utah Research Institute, Earth Science Laboratory, Salt Lake City, UT.