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Elko Co. General File
Item 87

SNAKE MTNS.

ELKO CO.

No. of Wells

HOT CREEK FINAL REPORT

1979



~~T 37N~~

T 42N, 43N R60E, 61E

January 19, 1980

From Homestead property
files.

HOT CREEK FINAL REPORT

INTRODUCTION

Hot Creek is located 50 miles northwest of Wells, Elko County, Nevada, on BLM land in T42, 43N, R60E, and T42N, R61E on the west side of the Snake Mountains (Figure 1). The property covers several small windows of Roberts Mountain and Hansen Creek formation rocks exposed through Upper Plate Valmy formation.

[REDACTED] Minor sampling had been encouraging and the rocks visible through the snow were favorable. [REDACTED] accepted the property for project status in February.

CLAIM STATUS

[REDACTED] had been staked in early January to cover the most important geology. Due to the staking fever in the Snake Mountains, [REDACTED] immediately staked 195 additional claims to cover the entire window and some surrounding ground. The property status is shown on Figure 2, and all claims are listed in Appendix 1. The claims have been recorded in the Elko County Court House and with the BLM in Reno. A notice of Intent to Hold Claims was filed with the BLM in August, 1979.

GEOCHEMICAL SAMPLING

Approximately 900 ridge and spur samples were taken on 200' centers over the entire claim block. Results were disappointing since only six of the samples contained detectable gold. Sample numbers, locations, and gold values are shown on Figure 3.

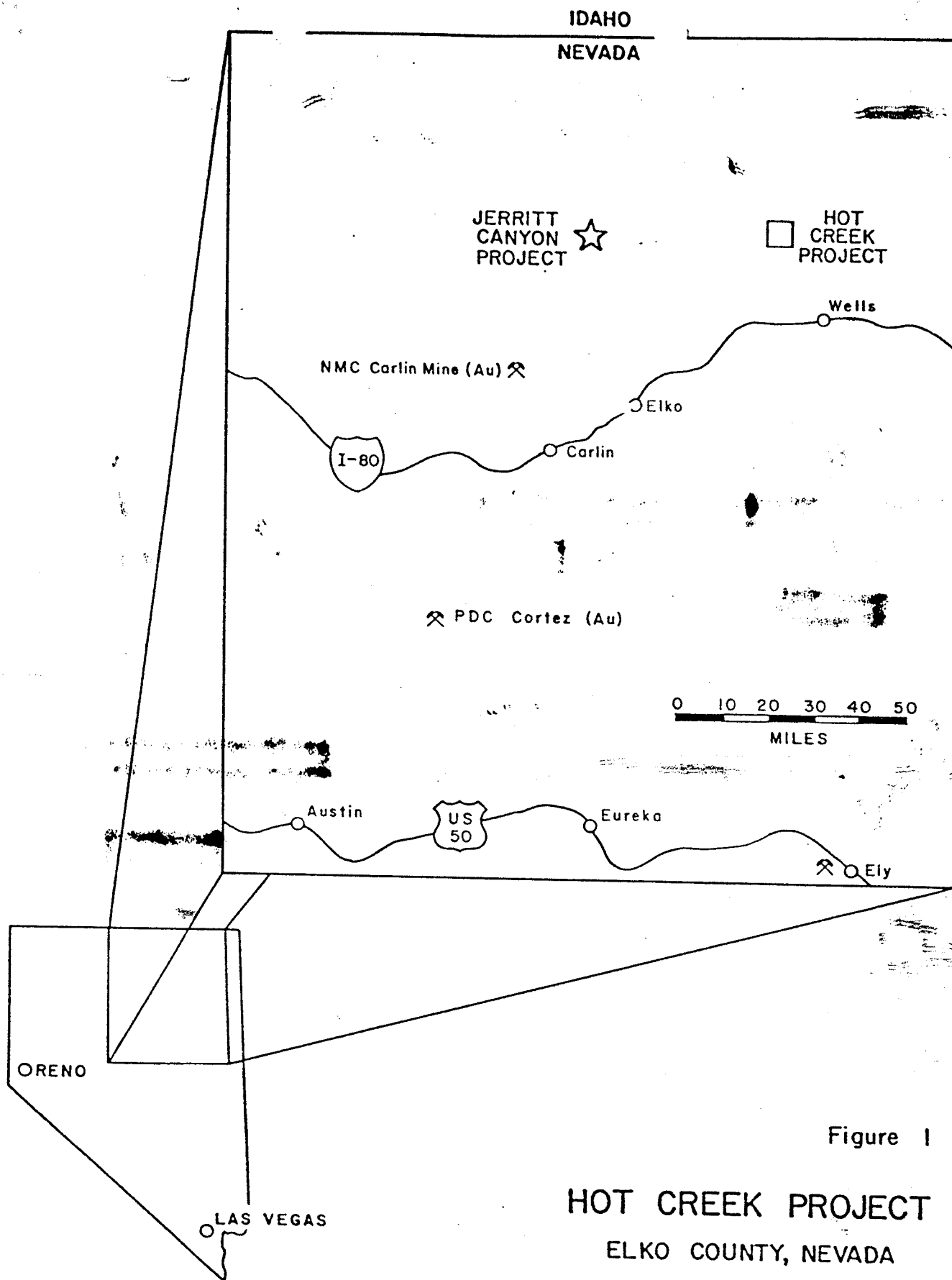


Figure 1

HOT CREEK PROJECT
ELKO COUNTY, NEVADA
LOCATION MAP

An area of favorable geology where four ridge and spur samples contained detectable gold was grid sampled on 200 foot centers (also shown on Figure 3). No gold was found in any of these 237 samples. The discrepancy between gold in ridge and spur sampling and none in grid samples could be due either to the nugget effect or to contamination during sample preparation.

More detailed sampling was done in the highly altered area around the hot springs in Hot Creek, and jasperoids and silicified areas were all sampled either during the ridge and spur survey or during mapping.

Although the geochemical results from the sampling programs were negative the geology of two areas remained sufficiently interesting to drill a few holes.

GEOLOGY AND MAPPING

The northern Snake Mountains were mapped by Douglas Gardner for his Ph.D. in 1968. A more detailed discussion of units and regional geology may be found in his dissertation, entitled "Structure and Stratigraphy of the Northern part of the Snake Mountains, Elko County, Nevada" (University of Oregon, 1968).

Figure 4 is a geologic map of the Hot Creek Project area produced [REDACTED] in 1979. The Roberts Mountain/Hansen Creek/undifferentiated Devonian windows trend NNW and are in fault contact on the north and east with Upper Plate Valmy cherts, argillites and greenstones. The windows are bounded by pediment gravels and Quaternary alluvium on the south and west. Pennsylvanian-Permian limestones, argillites, and cherts of the Strathearn and Phosphoria formations crop out on the northern part of the claim block. A description of each lithology follows.

The Eureka quartzite (Ordovician) is present only in the south end of the claim block. The Eureka at Hot Creek is a medium grey, moderately well sorted quartzite with some local, brown-weathering, limey shale beds. All the Eureka outcrops are fault bounded and broken up, so a complete section is not present.

The Ordovician Hansen Creek formation is a moderately hard, medium grey, medium bedded limestone and crops out in the southern half of the claim block. Locally it contains chert lenses and fossil hash beds with trilobites while other sections are fairly platy.

The Silurian Roberts Mountain formation is generally a platy, tan weathering, calcareous siltstone as at Jerritt Canyon. It locally contains pyrite and carbonaceous lenses, and is well silicified in the southeast corner of the claim block and in the vicinity of the southern group of drill holes. It is fairly easy to distinguish from the Hansen Creek but very hard to distinguish from the younger undifferentiated Devonian rocks which overlie it.

Undifferentiated Devonian rocks crop out in the vicinity of Hot Creek itself and just north of Currant Creek. Devonian lithologies include carbonaceous grey limestone and shale similar to the Hansen Creek formation and light grey silicious platy siltstone similar to the Roberts Mountain formation but generally non-calcareous. Just north of Hot Creek an outcrop of Devonian limestone contains numerous large rugose corals.

The Upper Plate rocks at Hot Creek are Ordovician Valmy formation. Lithologies include shale, quartzite, multicolored chert, and greenstone. Considerable bedded barite is being mined by Chromalloy from Valmy units farther south in the Snake Mountains. The Valmy crops out as massive zones of bedded chert and produces distinctive dark reddish-brown soil with

considerable chert float.

In the northern part of the claim block the Upper/Lower Plate sequence is unconformably overlain by Pennsylvanian and Permian rocks of the Strathearn and Phosporia formations. The base of the Pennsylvanian sequence is marked by a discontinuous bed of chert pebble conglomerate which is visible in several places interbedded upsection with partly to totally silicified sandstone. Some of the limestone contains fossil hash beds full of crinoid stems. Toward the Strathearn/Phosphoria contact on the peak north of Wildcat, the limestone becomes completely silicified. The Phosphoria formation in the claim block area is very silicic, containing red-brown cherts, quartzites, and argillite with some interbedded limestone. It is lithologically similar to the Valmy but contains more limestone and forms higher, steeper hills which support almost no vegetation.

Alluvium and colluvium extend from the western contact of the upper-lower plate sequence into the valley to the west. Most of this material is of Valmy derivation masking the contact between the two units. The contact appears to follow and partially cover the NNW trending range front fault.

STRUCTURE

Two ages of deformation are visible in the Hot Creek Project area. The older is associated with the late Devonian-early Mississippian Roberts Mountain thrust which thrust western facies Valmy formation over the eastern facies Eureka/Hansen Creek/Roberts Mountain/undifferentiated Devonian series of rock. Gardner mapped these faults as the Smokey Mountain and associated sympathetic thrusts. None of the thrusts in the Snake Mountains have been named the Roberts Mountain thrust because of the 45 mile distance separating these thrusts from the Roberts Mountain thrust in the ranges to the west.

The rocks in the Snake Mountains are virtually identical to those in the Independence Range (Jerritt area) and were moved to the east along a WNW trending transform fault zone which passes just north of the Jerritt area and just south of the Snake Mountains. Thus, the Smokey Mountain thrust probably is the Roberts thrust.

The second period of deformation in the Snake Mountains is mid to late Tertiary Basin and Range block faulting. The range front fault through the Hot Creek area trends NW and is cut by several NE trending normal faults. The range front fault has major displacement, and the displacement along the NE faults is highly variable. The faults are most obvious where they juxtapose two lithologies and are very hard to trace through a uniform formation particularly where outcrop is limited.

Folding is present but due to limited outcrop, the folds are obscured. One fairly distinct anticline is present in the Roberts Mountain formation in the southern part of the claim block.

JASPEROIDS AND SILICIFICATION

Silicification and jasperoids sparsely occur in the lower plate rocks throughout the area. In Willow Creek and Hot Creek reddish-brown jasperoid breccias cross each drainage along faults in the Hansen Creek formation. As the structure climbs the hill out of Hot Creek the colored jasperoid grades to light grey highly silicified limestone and further uphill into grey limestone with numerous associated calcite veins. In the tributary drainage just south of Hot Creek jasperoids occur just above the valley bottom and appear to be pods without horizontal or vertical continuity. The jasperoid crossing Willow Creek extends nearly to the ridgetop on the north side. To the south it follows a fault which dips to the west and flattens uphill. Nowhere are there massive jasperoids holding up ridges as there are at Jerritt.

Silicification occurs in the Roberts Mountain formation in two areas.

Along the south edge of the claim block susceptible Roberts Mountain beds 10 to 15 feet thick have been silicified. Outcrops of these silicified units define the previously mentioned anticline. A second fairly narrow silicified zone occurs parallel to the thrust fault for about one half mile north and south of Willow Creek. Bedding and silt grains are still visible in all the silicified Roberts Mountain rocks.

DRILL TARGETS AND DRILLING

Despite the discouraging geochemical data, a minimal drill program was undertaken to test two areas of favorable lithology and alteration at Hot Creek (see figure 4). Six holes (H1-H6) were drilled just south of Willow Creek where jasperoid occurs along a steep normal fault in the Hansen Creek limestone, and where silicified Roberts Mountain formation parallels the Stormy Mountain thrust fault. These holes tested favorable Hansen Creek and Roberts Mountain lithologies adjacent to the silicic alteration. Four of these holes were collared in Hansen Creek limestone. They penetrated moderately hard grey limestone which contained calcite veinlets and locally contained limonite along fracture surfaces. Carbon was encountered along fractures near the jasperoid ribs. Two holes were collared in Roberts Mountain siltstone. The siltstone was well oxidized throughout H-5. H-6 contained interbedded tan to reddish oxidized siltstone and dark grey silicified siltstone. Five holes were located to test the large alteration zone around Hot Creek proper. All the holes were collared in Devonian siltstones or limestones. These units were oxidized for the entire length of the hole. H-7 intersected 100°F water at a depth of 104'. All holes except H-6 were terminated prior to reaching the target depth due to lack of circulation. Efforts to restore circulation were made to no avail.

DRILLING RESULTS

The two best structural and lithologically target areas were drilled and results were negative. No other targets were indicated with surface geochemistry and the decision to discontinue work on the project was made in October, 1979.