CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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GOLD CLIFF GROUP

33°-50'
111°-55'

Flying Saucer Group

Much of the information on the Flying Saucer Group was gathered by a DMEA team of engineers in 1953.

The Flying Saucer group of six unpatented lode claims is in sec. 12, T. 6 N., R. 6 W., in the Vulture Mountains southwest of Wickenburg at an altitude of approximately 2,600 feet. The property is 2.6 miles west from the center of Wickenburg on U. S. Highway 60-70 to the Vulture-mine road, south 7.8 miles to the dim trail in a canyon bottom, that branches northwesterly from the road, and on this trail, 0.6 mile to the eastern part of the claims (fig. 12).

The claims were owned in 1950 by J. Frank Henderson. The claims now are owned by W. C. Kinnon of Phoenix, Ariz. The workings comprise the discovery shafts and some trenching. There has been no production from the property.

The Flying Saucer group is in an area of medium-grained biotite granite having a number of intrusions of later igneous rocks, which include several kinds of porphyries and some pegmatites and irregular basic intrusives. In some places the granite is fine grained or has been replaced largely by quartz banding. Short and narrow quartz veins and some that are more persistent occur in a few places. These are reported by the owners to contain powellite.

The tungsten mineralization consists of powellite and scheelite, and the deposition of these minerals does not favor any particular kind of rock. Examination of the surface at night showed great areas of brilliant fluorescence, which included granite and all the dike rocks except a late basic dike. In crossing from one formation to another no change is visible in the amount, character, and intensity of the fluorescence. Powellite is more abundant than scheelite.

On Scorpion Hill one area of intense fluorescence is 400 feet long and has a maximum width of nearly 200 feet. There are scores of smaller showings on the other claims of the group.

Most of the powellite and scheelite occurs as disseminations through the rock in roughly rounded forms, which average from pinhead to marble size. Streaks, stringers, and veinlets largely are absent.

The most puzzling features of this occurrence are the low WO_3 content for such brilliant fluorescence and the impossibility of identifying the structural controls that limit its extent.

The eight samples cut during the investigation assayed from less than 0.01 to 0.22 percent WO_3. Sampling indicated that the brilliance and amount of fluorescence were not criteria of the WO_3 content of the material.

Gold Cliff Group (Golden Reef)

The Gold Cliff group of four patented and nine unpatented lode claims is in sec. 11, T. 6 N., R. 4 E., in northeastern Maricopa County at an altitude

of 3,000 feet. The property, by road from Cavecreek, is 27 miles north of Phoenix, 0.4 mile westerly and 1.0 mile northerly to a road fork, right 3.5 miles northeasterly to the Sierra Vista guest ranch, and left at the barn and northeasterly about 1.25 miles to the mine (fig. 13).

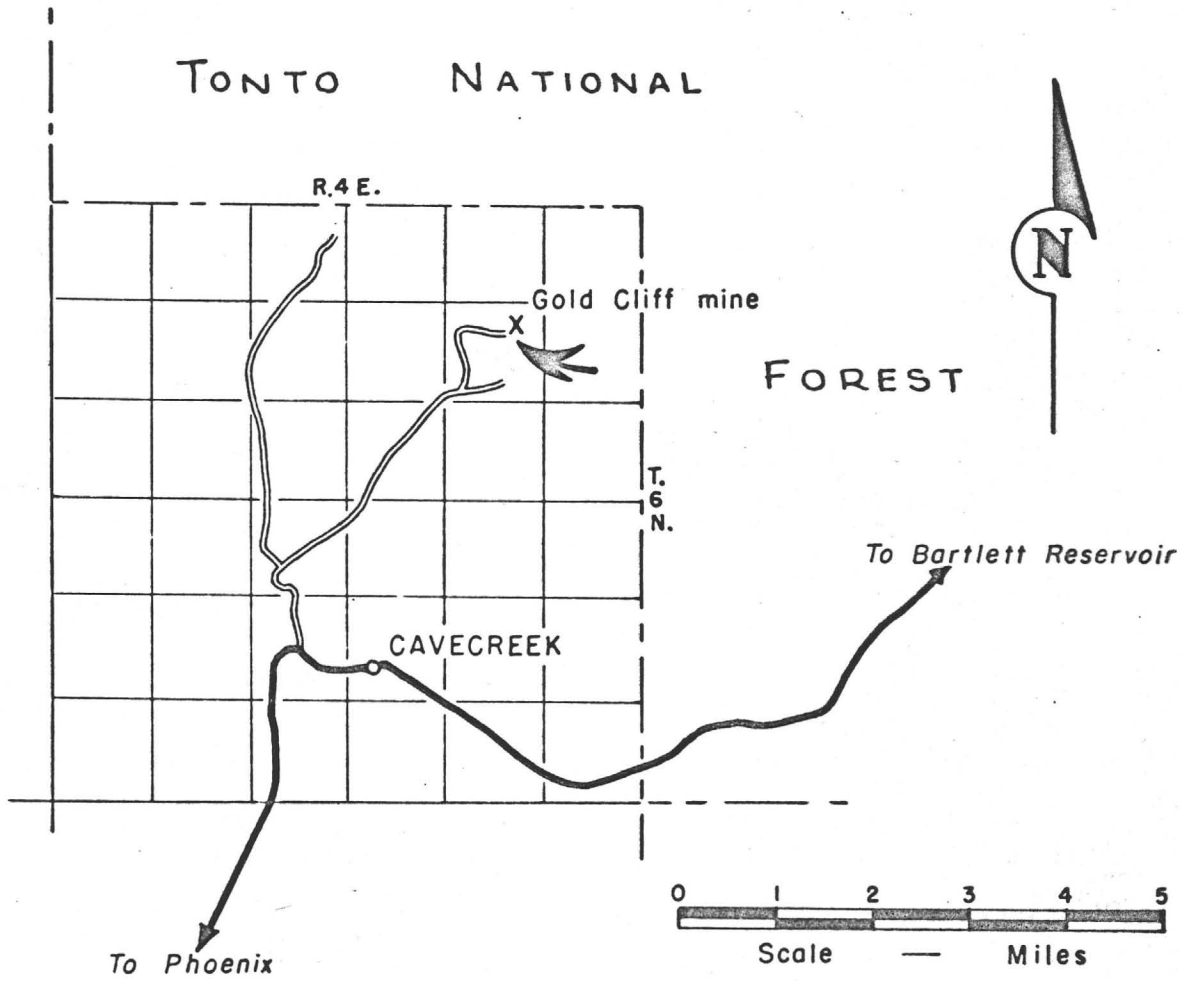

FIGURE 13. - Gold Cliff Group, Maricopa County, Ariz.

A padlocked cable across the road prevented the author from examining these claims; however, several engineers had visited the property, and the following is quoted from one of their reports.12/

> The northeastern portion of this property contains quartz veins from which, for many years, gold ore has been mined intermittently and concentrated in a stamp-gravity mill.

12/ Wilson, E. D., Tungsten Deposits of Arizona: Arizona Bureau of Mines Bull. 148, 1941, p. 26.

Three claims in the southwestern portion of the group contain the principal tungsten deposits. These deposits, well-known by 1913, were worked during the World War (World War I) by the Pittsburg Tungsten Company, but figures on their production are not available . . . .

In 1936 the property was leased to Jack Lemons, who produced more than 5 tons of ferberite concentrates in a small gravity plant. The concentrates contained 60 to 67 percent WO_3. Lemons quit the property in 1947, and there has been no mineral production since that time.

The property was owned in 1941 by the Gold Cliff Mining Co., and Daniel Steele was the principal stockholder. After his death Mrs. Steele sold the property in 1949 to Russell Talbott, her son-in-law. He obtained patents to four claims and has retained possession of the nine remaining unpatented claims, according to Talbott.

The workings consist of several open stopes, surface cuts, and short adits.

Slaty to sericitic gray Precambrian schist, which strikes northeastward and dips northwestward at moderate angles, is intruded by a granitic stock that crops out over an east-west length of about a mile and a width of 1/4 to 3/4 mile. This granite has been extensively invaded and altered by pegmatite. The alteration consists largely of coarse sericite and quartz.

The area has been broken by several faults of undetermined displacement. Springs important for local water supply, are associated with some of these faults.

Two systems of fissures are prominent; one system, which strikes N. 45° E. and dips about 65° SE. is intersected by the other, which strikes N. 25° to 30° E. and dips about 60° SE.

The N. 45° E. fissures show extensive sericitization and silicification, in places forming zones 30 feet wide. Their outcrops, relatively resistant to erosion, are easily traceable.

The N. 25° to 30° E. fissures generally contain thin veins of quartz up to 3 inches thick, together with iron oxide. Oxidized iron and copper minerals are locally abundant in the walls.

Tungsten deposits are known to occur in six of the N. 45° E. zones, of which four have been productive. The principal mineral is ferberite, locally with auriferous pyrite, chalcopyrite, fluorite, and minor molybdenite. In places near the surface, copper carbonates, iron oxides, tungstite, and cuprotungstite are abundant; Hess[13/] believes that the latter mineral formed through mutual decomposition of

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13/ Hess, F. L., Tungsten Minerals and Deposits: Geol. Survey Bull. 652, 1917, pp. 33, 64.

ferberite and copper minerals. He cites one analysis which shows the ferberite to contain 2.20 percent of columbium-tantalum oxide.

> The ore shoots, of which some as much as 2 or 3 feet wide have been mined, clearly seem to be related to the intersections of the fissures, as if the N. 45° E. zones were permeable structures mineralized by the N. 25° to 30° E. fissures. Some of the N. 45° E. zones contain ferberite seams and replacements for tens of feet southwest of these intersections.14/

Lemons stated that the ferberite occurred next to the footwall in lenses containing as much as 600 pounds of nearly pure mineral. He also said that occurrences of pure ferberite up to 8 inches wide had been mined.

Tungsten Refining Co.

The offices and separation plant of the Tungsten Refining Co., an Arizona company, are at 2244 East Henshaw Road, Phoenix, Ariz. The company was formed in April 1957. The separation plant was completed, and full production reached in November 1957. The capacity of the plant is 7,500 units of WO_3 per month.

Both foreign and domestic tungsten concentrates are purchased, and Filament-grade concentrate is sold. Other minerals and elements also are recovered and sold. The company will buy high-molybdenum-content concentrates and table or jig products but no flotation concentrates. It prefers scheelite concentrates but will purchase wolframite concentrates under certain conditions.

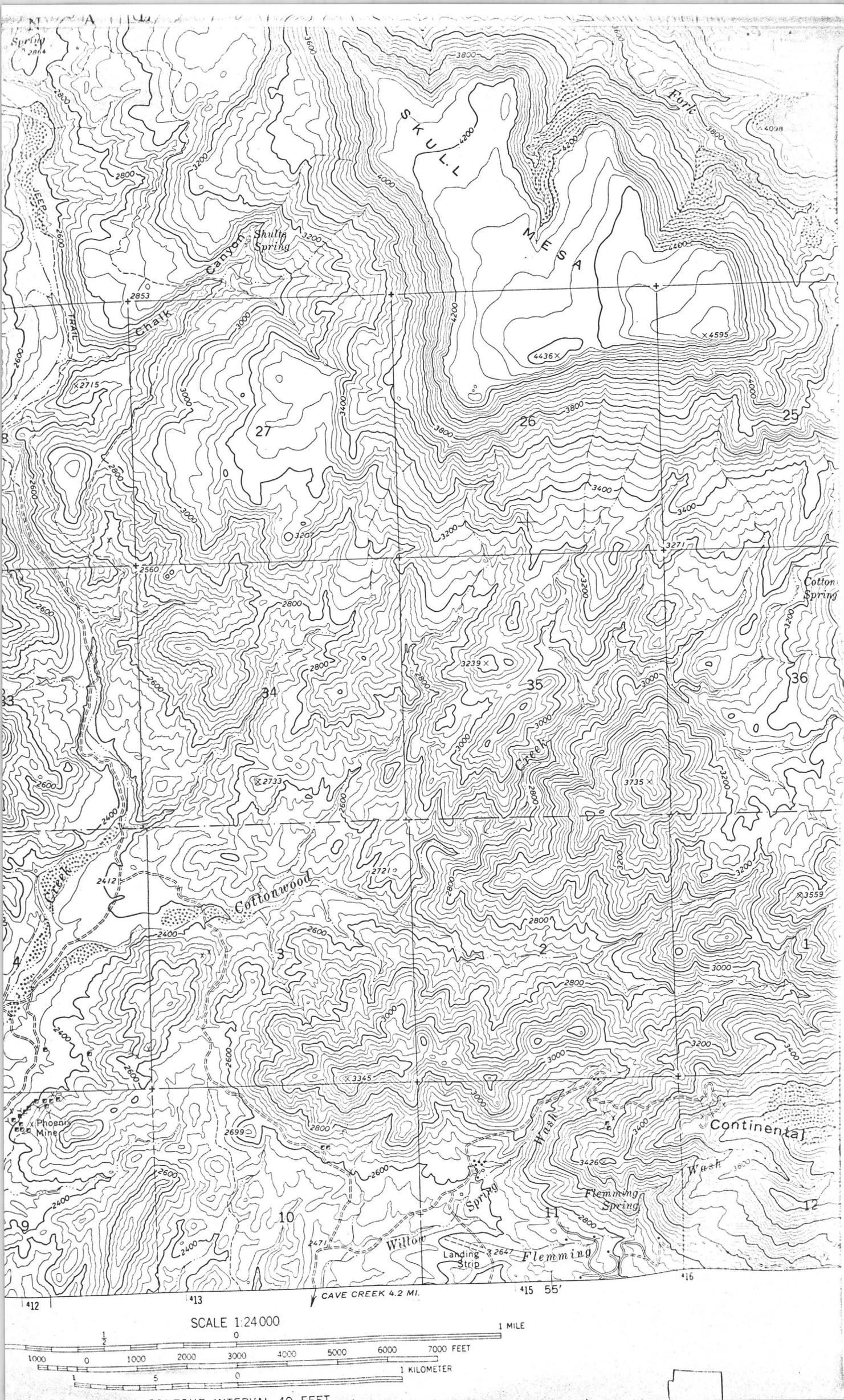
About $90,000 has been invested in the chemical-separation plant and $60,000 in the physical-separation plant, which consists of an elaborate sizing plant. Physical separations are effected entirely by dry processes consisting of magnetic, electrostatic, and air-gravity methods. Particle separation is entirely successful on a dry concentrating table when the gravities of the minerals differ by 20 percent, according to E. L. Whipple.

The Colorado Research Foundation developed the processes being used in the chemical plant. The methods are unconventional, and concentrates containing up to 3 percent molybdenum can be processed without losing any WO_3 content.

There is no waste dump at this plant. All minerals associated with tungsten are separated and sold, including oxide, sulfide, phosphate and silicate minerals.

When the author visited the plant in April 1958, it was working at only 20-percent capacity. The company at that time was interested in procuring a constant supply of concentrates from domestic sources.

14/ Work cited in footnote 12 (p. 38), pp. 26-27.


SKULL MESA
Fork
Chalk Canyon
Shultz Spring
JEEP TRAIL
Cotton Spring
Creek
Cottonwood Creek
Phoenix Mine
Wash
Continental Wash
Flemming Spring
Willow Spring
Landing Strip
Flemming
CAVE CREEK 4.2 MI.
SCALE 1:24000
1 MILE
7000 FEET
1 KILOMETER


PHOENIX MINE 0.9 MI.
57'30"
412
3651 IV NW
(NEW RIVER MESA)
414
415 55'
Well
JEEP TRAIL
9
10
11
Well
16
Wash
15
14
Well
Springs
Willow
21
22
23
Wash
Creek
Rowe
ROAD
SCHOOL HOUSE
Grapevine Spring
GRAPEVINE
28
27
26
BM
2106
BM
2196
Trailer Park
Trailer Park
Galloway
CAVE CREEK
Cave Creek
WC
Well
BM
2343
Heliport
Carefree
33
34
35
ROAD
Cave Creek
3398
Black Mtn
WC

RIOR


410
PHOENIX MINE 0.9 MI.
57'30"
412
3651 IV NW
(NEW RIVER MESA)
414
Well
JEEP TRAIL
Wash
Cave
Willow Springs
Creek
Jim Adams Well
TRAIL
Mine
Go John Mtn
JEEP
TRAIL
Go John Canyon
Creek
RIVER
ROAD
HOUSE
SCHOOL
ROAD
Rowe
Galloway
GRAPE
Trailer Park
Trailer Park
Cave Creek
CAVE CREEK
Cave Creek
Black Mtn
Mormon Gir
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