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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: OUTPOST

ALTERNATE NAMES:
OUTPOST EXTENSION

YAVAPAI COUNTY MILS NUMBER: 205A

LOCATION: TOWNSHIP 7 N RANGE 3 W SECTION 3 QUARTER NE
LATITUDE: N 33DEG 59MIN 00SEC LONGITUDE: W 112DEG 33MIN 25SEC
TOPO MAP NAME: RED PICACHO - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
FELDSPAR
BISMUTH
QUARTZ CRYSTAL
MICA
BERYLLIUM
FLUORINE
LEAD
VANADIUM
COPPER
COLUMBIUM

BIBLIOGRAPHY:
USGS RED PICACHO QUAD
ADMMR MIDNIGHT OWL FILE
JAHNS, R.H. PEGMATITE DEPOSITS OF THE WHITE PICACHO DISTRICT AZBM BULL 162 1952 P 93
ADMMR OUTPOST MINE FILE

REFERENCES: ABM Bull. 180, p 108
ABM Bull. 162, p 96

IC 8298 p. 22

OUTPOST MINE YAVAPAI COUNTY

KAP WR 6/20/86: While in route to properties in other parts of the White Picacho District, Yavapi County it was noted that there are fresh tailings at the base of the mill at Anderson Camp. These are likely the result of a pilot mill test on the tantalum ores at the Midnight Owl (file), Outpost (file) and the Homestead (file) mines, White Picacho District, Yavapai County by Fansteel Metallurgical Corporation (card). There was no one at Anderson Camp.

KAP WR 8/22/86: Fansteel has backed off considerably on their plans to develop the Outpost MIne (file) and the Midnight Owl Mine (file) for tantalum.

KAP WR 8/22/86: During the last year a test lot of ore from the Outpost Mine (file) and the Midnight Owl Mine (file) was milled to recover tantalum and any other recoverable minerals. A pilot gravity mill was temporarily erected at Anderson Camp at the base of the Anderson Mill. The mill used Sid Anderson's Wifley table and rented crushing and grinding equipment.

KAP WR 8/22/86: Steelhead Resources, Spokane, Washington, has hopes of acquiring Fansteel's interest in the Outpost Mine (file) and the Midnight Owl (file).

KAP WR 7/1/88: Rupert Spivey, New Mexico, was in to discuss the sodium feldspar market. He is investigating the possibility of producing it from the White Picacho area. He has obtained leases from Fansteel on the Outpost (file), the Homestead Claim (file) and the Sunrise (Midnight Owl Mine (file) all in Yavapai County. He reported that Fansteel owns the properties having completed their purchase from Sidney Anderson. He also reported that Fansteel is returning part of the Midnight Owl property to Sidney Anderson. Steelhead Resources (card) no longer has an interest in the district.

OUTPOST MINE YAVAPAI COUNTY

Sidney Anderson requested information on grades of quartz and potential markets. He will collect a composite sample for SiO_2 content analysis. He also has an extensive feldspar pegmatite from which he will bring some samples. The deposits are located on the Outpost patented property in Maricopa-Yavapai County. KAP, WR, 8/30/76

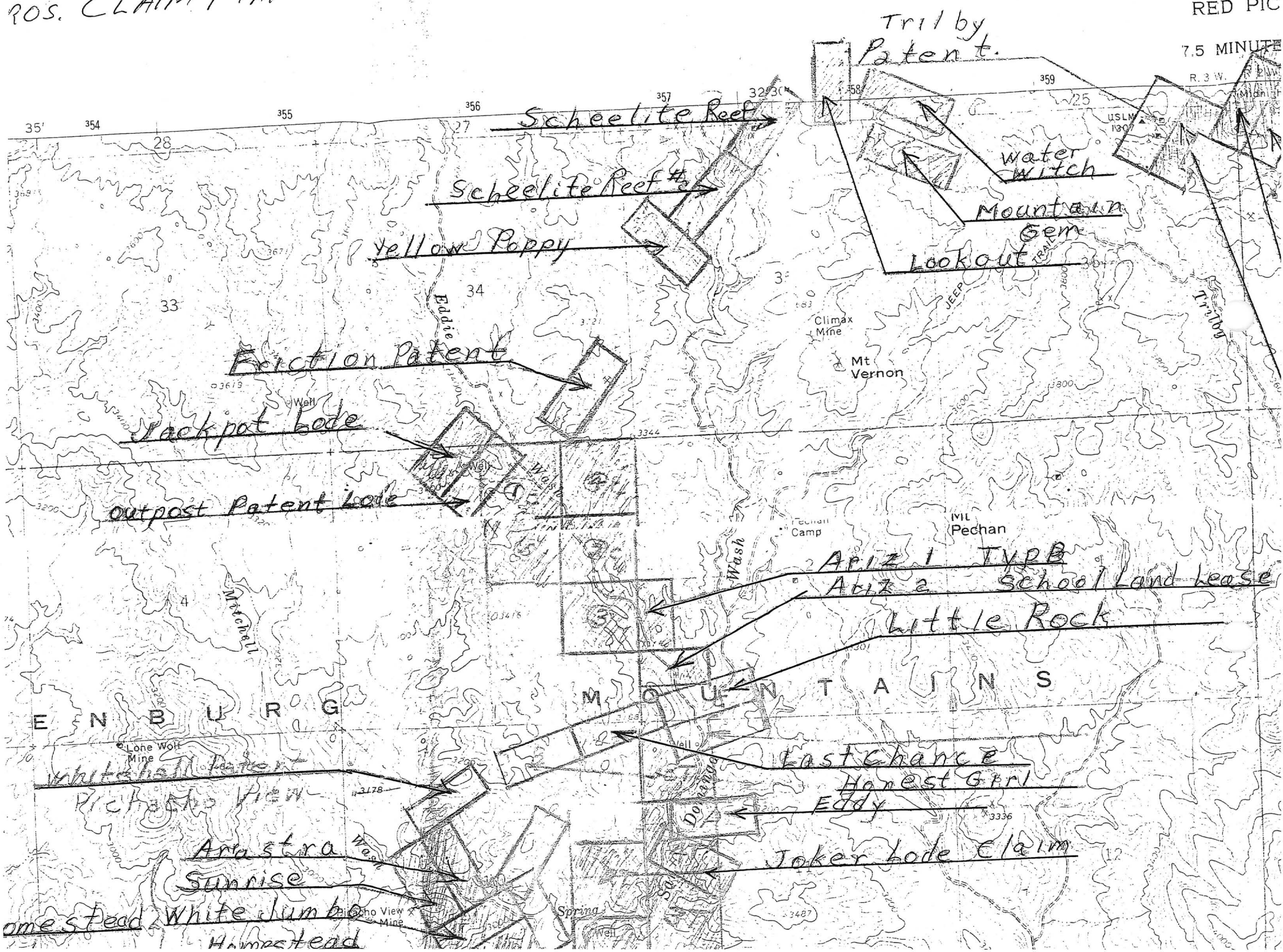
Sid Anderson reported that a firm, Standex International Corporation, 2300 Mercel Avenue S, El Monte, California, 91733, has had a lease from the Andersons to mine feldspar on their Outpost patented property in Yavapai County. Standex has never produced any feldspar and might sell the lease or sublease. Although the Outpost probably has the largest amount of feldspar, their Picacho View Claim also has a good-sized deposit and the Friction a fair-sized one. KAP WR 9/23/76

NJN WR 3/15/85: Rupert Spivy with Fansteel Inc (c) visited. He reported that Fansteel has purchased most of Sidney Andersons (c) Claims in the White Picacho District, Maricopa County. (Outpost (f), Homestead (f), Midnight Owl (f). Mr. Spivy will be moving out to the claims to set up their mine operations. Mining will begin at the Outpost (f) and Outpost Exptension Claims with tantalum being of primary interest. A pilot gravity mill consisting of spirals and tables with a capacity of 30 tons per day will be set up first. A drilling program on 10' centers is planned to further define the tantalum zone before mining. Initially only tantalum will be produced other materials will be stockpiled. Later it is hoped feldspar and some other products can be shipped.

KAP WR 3/29/85: Discussed Fansteel's plans at the Outpost Mine (file) with Ken Poulsen of Brush Wellamn. Since Fransteel reportedly plans mining and milling of Outpost ore to recover tantalite there might be an opportunity to recover beryl prior to crushing and concentrating for tantalite recovery.

KAP WR 5/17/85: Mr. Hal McGarr of Fansteel Metallurical Corporation, One Tantalum Plaza, North Chicago, Ill. 60064 (c) came in to the office. He is working with Robert Spivy, also of Fansteel. They have set up an office in Wickenburg which they are sharing with Milton Hood and can be reached by phone at 684-7843. Their Arizona mailing address is P O Box 205, Morristown, Arizona 85343. Their efforts are still directed towards developing the tantalum resources. Production of co-products such as beryl, mica and feldspar were discussed.

ROS. CLAIM MAP



DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Outpost Mine sec. 3, T 7N R 3 W + Sec 38 T 8N R 3W Date June 11, 1962

District White Picacho Dist., Yavapai Co. Engineer Lewis A. Smith

Subject: Interview with Virgil Denny 6-8-62

Virgil Deaning

Mr. Denny reported that the White Hall Corp, (Bon Ami) held a lease on the Feldspar in the Outpost pegmatite for a reported 100 year period. The columbite-tantalite occurs in small disseminated crystals which can be separated by gravity. Magnetite content of the ore is neligible and there appears to be no other heavy minerals which would complicate the separation of the Columbite-tantalite by gravity methods. Denny felt that the beryl in the ore could be separated by flotation except that the beryl distribution in the ore was sporadic. He hand-separated and shipped 4-3/4 tons of beryl last year, for which he received $525. per ton. The ore ran 10.5 percent of BeO. He is contemplating working this again during the lay-off period at White Peaks providing a suitable market can be found since the depot, in South Dakota has not so far been given additional funds for 1962-1963.

The inner intermediate zone comprises very coarse crystals of perthite and scattered masses of quartz. Some of the quartz is interstitial to the feldspar crystals, but most of it forms small pods of very coarse-grained anhedral crystals. There are all gradations between the largest of these pods and irregular masses of quartz that seem best interpreted as segments of a discontinuous core. These segments, which are largest and most abundant on the ridge immediately above the rim of the Main cut, range from about 3 feet to nearly 40 feet in maximum dimension. The distinction between the core and the inner intermediate zone is somewhat arbitrary, and the two units are shown together in Plate XX.

Scattered through the feldspar and quartz of the inner pegmatite units are pyrite, biotite, garnet, and iron oxides. Small quantities of allanite, columbite, molybdenite, sphalerite, galena, and such supergene minerals as molybdite, cerussite, hemimorphite, and wulfenite also are present, chiefly along fractures in quartz. Dark green and black tourmaline forms single prisms ⅛ inch to 1¼ inches in diameter, as well as bunches of elongate crystals that diverge slightly from common ends. The crystals show all stages of alteration to mica and clay minerals, and many are jacketed by scaly aggregates of muscovite.

Pyrite, much of it altered pseudomorphically to iron oxide, is locally abundant as well-formed cubes ⅛ inch to nearly an inch in diameter. Most of these are scattered in and along the margins of ¼-inch to 6-inch fracture fillings of quartz, and some others, generally of much smaller size, are strung out along fractures in the altered tourmaline. The concentrations of sulfide minerals are marked by streaks of iron-oxide stain in outcrops and in the faces of the cuts.

Very coarse-grained potash feldspar of excellent commercial grade surrounds the quartz masses of the core and inner intermediate zone, and also is abundant in the inner part of the outer intermediate zone. Typical material is well exposed in the Main cut. Large aggregates of very coarse perthite crystals also are exposed in the North cut, but much of this material contains considerable quantities of intimately intergrown quartz, and hence is of distinctly lower commercial grade.

The general distribution of coarse-grained potash feldspar, as mapped solely in terms of commercial factors, plainly bears a systematic relation to the zoning within the pegmatite mass (see insert, Pl. XX). Material of top quality, for example, is closely associated with the pods of massive quartz, and requires only a rough cobbing for commercial separation. This feldspar of the inner intermediate zone, moreover, represents a relatively high proportion of the rock that must be handled in mining. On the basis of counter-wheel traverses, spaced 5 feet apart and run in two directions at right angles, it is estimated that approximately 68 per cent of the high-grade feldspar-bearing unit shown in Plate XX is coarse-grained perthite. The reserves of such material to a depth of only 30 feet should amount to approximately 10,500 tons, about 80 per cent of which should be recoverable by the usual methods of hand sorting.

Considerably greater reserves of medium-grade feldspar occur farther from the center of the pegmatite body, chiefly in the outer intermediate zone. This material presents a more difficult problem of hand sorting, even though the proportion of quartz in the rock is distinctly lower than that in the high-grade permatite. Despite the occurrence of large masses of nearly pure blocky perthite, much of the feldspar in the rock contains scattered crystals of schorl and irregular masses, veinlets, and interstitial aggregates of anhedral quartz. These impurities would be difficult to remove without serious loss of time or waste of coarse feldspar. Thus, it does not seem likely that more than 10,000 tons of feldspar could be recovered by hand methods as a product of No. 1 grade from the 21,500 tons of medium-grade feldspar-bearing pegmatite estimated to be present to a depth of 30 feet, even though the same mass of rock probably would yield nearly 20,000 tons of No. 2 grade material if it were carefully mined and then shipped without further sorting.

The third commercial unit in the pegmatite, shown as low grade in Plate XX, contains too much intimately mixed quartz and other impurities to yield a No. 1 product by hand cobbing. Although material similar to this is marketed as No. 3 and even as No. 2 grade feldspar in some eastern states, this deposit lies so far from centers of demand that the lower grades of feldspar derived from it probably could not compete successfully under current market conditions. Substantial reserves of higher-quality material seem to be present on the property, however, as the inner units of the pegmatite body probably extend to depths considerably greater than the 30 feet assumed in the foregoing calculations of tonnage.

OUTPOST MINE

The Outpost feldspar mine (11, Pl. I) lies near the west end of a prominent ridge in the NW ¼ of the NE ¼ of sec. 3, T. 7 N., R. 3 W. It was worked for bismuth minerals during 1947 and 1948 by the owners, Earl F. Anderson and Sidney B. Anderson of Mesa, and in 1947 the deposit was explored for high-grade feldspar by the Whitehall Corporation of Keene, New Hampshire. Production to date includes approximately 12 tons of bismuth minerals and a 1,500-ton stockpile of feldspar.

The workings comprise the bench-like Main cut, which is 90 feet long, 35 feet wide, and about 20 feet deep at the face; the smaller Bismuth cut and appended 20-foot incline 60 feet to the east; and several irregular trenches, pits, and cuts higher on the slope to the south and east (Pl. XXI). Much of the mine area has been stripped with a bulldozer, and the rocks are unusually well exposed.

The pegmatite body is a large, thick pod, the uppermost parts of which have been laid bare by erosion on the north slope of the ridge. This pod trends north to north-northeast, appears to

dip steeply east, and plunges north-northeast at a moderate angle. It is curved in plan, and its western margin is broadly convex as exposed on the ridge and on the slope to the south (Pls. XXI, XXII). The north, or crestal, part of the pod is largely concealed by dump material, but it appears to split into two subparallel prongs that are 15 feet to 70 feet thick immediately north of the mine area.

The country rock is mainly dark-colored hornblende gneiss and quartz-hornblende-biotite gneiss and schist. Chlorite-rich and epidote-rich layers are abundant, and a few thickly tabular masses of greenish, punky-appearing intrusive rock also are present. A thick inclusion of hornblende schist and gneiss is exposed immediately east of the Main cut, and a somewhat larger, more elongate inclusion appears at the southwest end of the cut (Pl. XXI). Schorl is abundant in the schists and gneisses near the pegmatite contacts. Most of the country rock is thinly foliated, and this planar structure trends east and dips steeply north.

The thin border zone of the pegmatite body is fine to medium grained, and consists mainly of quartz with subordinate albite, perthite, schorl, muscovite, and biotite. It encloses a wall zone that is 2 inches to 16 feet thick, and has an average thickness of about 3 feet. This zone is chiefly a medium- to coarse-grained aggregate of quartz, albite, perthite, muscovite, and schorl. Much of the quartz, the principal constituent, is albitized along fractures. Muscovite and biotite are present in small quantities near contacts with the wallrock. As traced inward toward the center of the pegmatite body, the wall zone coarsens gradually and contains increasing amounts of potash feldspar as scattered anhedral to subhedral crystals. The proportions of schorl, quartz, and albite decrease correspondingly, although albite is locally abundant along the eastern margin of the dike.

The outer intermediate zone, mainly a coarse-grained aggregate of perthite with subordinate quartz and minor albite and muscovite, ranges in outcrop breadth from less than an inch to about 55 feet, but its true thickness probably is nowhere greater than 15 feet. Pod-like concentrations of muscovite, in ½-inch to 4-inch books, are scattered through this unit; one of these is well exposed in a bench-like cut that lies a short distance south of the Bismuth cut (Pl. XXI).

The inner part of the pegmatite body comprises an inner intermediate zone that is rich in blocky perthite, and a segmented core of massive quartz. The intermediate zone is arch-like in form, and is thickest on the crest of the core; it thus is most broadly exposed on the northerly slope of the ridge. The perthite is white to pale flesh colored, and occurs in very coarse-grained aggregates that contain little other material.

The quartz core is unusually large with respect to the other zones. It forms irregular masses, the largest of which is about 80 feet wide and extends southward from the ridge crest for a distance of at least 175 feet. A smaller, highly irregular segment

is exposed in and adjacent to the Main cut, and numerous pods 2 inches to 18 feet in maximum dimension are scattered on the hill slope to the south and east (Pl. XXI). Some of these may be projections from one or more larger core segments that lie only a few feet beneath the surface.

The outer parts of the quartz masses contain veinlets of sugary albite and larger, more equidimensional aggregates of cleavelandite in crystals ¼ inch to 1½ inches long. Cleavelandite also forms scattered rosettes and masses that are cauliflower-like in form. These range in diameter from a few inches to 4½ feet, and in places are fringed by, or intergrown with, aggregates of muscovite books. These masses of albite are most abundant along the west side of the main core segment, where albite-rich pegmatite is shown as a separate unit on the map (Pl. XXI). Similar aggregates of cleavelandite also are scattered sparsely through parts of the perthite-rich intermediate zones.

The chief accessory species in the pegmatite are apatite, beryl, fluorite, garnet, microlite, pyrochlore, pyrite and other sulfides, schorl, and a varied assemblage of bismuth, lead, vanadium, and copper minerals. Apatite is present in the outer part of the quartz-rich units as gray to dark bluish gray crystals without clear-cut faces. Beryl occurs as small anhedral crystals in the border and wall zones, and rarely as prismatic euhedral crystals in the inner parts of the inner intermediate zone. A few of these crystals extend into adjacent masses of quartz. Most of the beryl is pale bluish green in color. Pale greenish fluorite and salmon pink to orange-red spessartite are scattered through parts of the outer zones, chiefly as tiny crystals that are associated with schorl. They also form a few much larger crystals in the central part of the dike.

Sulfide minerals, chiefly pyrite and pyrrhotite, are scattered irregularly through the inner units, and are similar in distribution to the sulfides in the Picacho View pegmatite. Local clusters of these crystals have imparted a considerable stain to the adjacent feldspar masses in the zone of weathering. Pyrochlore and microlite are present as tiny, highly lustrous, olive green to dark brown and black crystals, principally in the intermediate zones and adjacent parts of the wall zone. These minerals are widespread, but individual crystals are inconspicuous and nowhere constitute more than 0.1 per cent of the pegmatite in which they occur.

Bismutite and other bismuth minerals are locally abundant in brecciated and sheared quartz-rich pegmatite that is capped by a 2-foot to 9-foot layer of partly albitized wall-zone pegmatite in and near the Bismuth cut. They form veinlets and stockworks in the quartz, and also occur as scattered irregular masses 2 inches to 7 feet in diameter. The bismutite is canary yellow, yellowish green, and greenish gray, and associated with it are small aggregates of finely crystalline, light gray beyerite. Scattered through both minerals are tiny flakes of native bismuth. Dark masses of bismuthinite form the cores of several large

aggregates of bismutite crystals, and probably are hypogene. Well formed pyramidal crystals of honey yellow to very dark brown cassiterite, some as much as an inch in diameter, are scattered through the earthy masses of bismutite, and are extensively fractured and veined by both bismutite and beyerite. The bismuth minerals are themselves transected by fracture-controlled veinlets that contain wulfenite, vanadinite, pyromorphite, mimetite, anglesite, cerussite, chrysocolla, cuprite, and fluorite. Most of these minerals form small, sharply faced crystals. Tiny flakes of native silver and molybdenite are disseminated through some masses of bismutite and beyerite.

The Outpost pegmatite offers greatest commercial promise as a source of potash feldspar. The intermediate zones, which are very rich in coarse perthite, would yield a hand-sorted product of excellent quality. As shown in Plate XXII, the most readily recoverable high-grade feldspar occurs in the inner intermediate zone. This unit is best exposed on the slope southeast of the Main cut, where it surrounds some quartz core segments and presumably forms a blanket over other, more extensive parts of the core.

The minable rock exposed in the stripped area between the Main cut and the east wall of the dike contains about 17 per cent of core quartz, as determined from north-south linear traverses spaced 5 feet apart. This is in essential agreement with a quantitative comparison of the respective outcrop areas of the two units as shown on the map (Pl. XXI). If allowance is made for the masses of quartz and for those parts of the intermediate zone that contain objectionable quantities of muscovite, albite, or interstitial quartz, a reserve of approximately 6,800 tons of high-grade potash feldspar, recoverable by hand sorting, is indicated to a depth of 10 feet. Total reserves in the deposit undoubtedly are much larger, as the coarse feldspar-bearing rock probably extends downward along the flanks of the pegmatite body, as well as northward and downward along its crest.

OUTPOST EXTENSION PROSPECT

The Outpost Extension pegmatite (12, Pl. I) is exposed on both sides of San Domingo Wash about 1,200 feet north-northeast of the Outpost mine. It is a cross-cutting mass that trends east-northeast and plunges in the same direction at low to moderate angles. It may be arch-like in section, as suggested by exposures on the southwest side of the wash. Here the dike, which is 25 feet to 35 feet thick, forms a broad hood over a mass of dark gray schist and pink to gray quartzite. This mass of country rock crops out for only a short distance above the level of the wash, and might be an inclusion or the tip of a large, upward projecting septum.

The border zone of the pegmatite body is 2 inches to 14 inches thick, and is a fine- to medium-grained aggregate of quartz, albite, perthite, and schorl. It grades inward into distinctly coarser-grained perthite — albite pegmatite that contains subordinate quartz. The central part of the dike is mainly coarse, blocky perthite, with scattered pods of massive quartz. Some of the quartz masses are relatively continuous, and are as much as 50 feet in maximum dimension.

Albite is unusually abundant, particularly in the exposure along the edge of the wash and south of the wallrock mass noted above. The mineral occurs in the coarse perthite and quartz as large, platy crystals, and elsewhere as compact, lustrous aggregates of small, tabular, white to pale green crystals. The central parts of the dike are cut by 1-inch to 4-inch fracture-filling stringers of very fine-grained, compact, pale green muscovite.

The part of the pegmatite body exposed on the east side of the wash contains a large core of massive quartz, which is locally sheared and thinly veined with copper, lead, zinc, and bismuth minerals. The mineralogy is somewhat similar to that of the rock mined from the Bismuth cut at the Outpost deposit. The quartz core is flanked by pegmatite rich in large, subhedral crystals of perthite.

FRICTION MINE

The Friction feldspar mine (13, Pl. I), on the east side of a prominent ridge in the SE ¼ of the SE ¼ of sec. 34, T. 8 N., R. 3 W., lies near the end of a well defined belt of abundant pegmatites that can be traced for at least ½ mile to the southwest. The deposit has been worked in a bench-like cut about 100 feet long, 30 feet wide, and 15 feet high at the face, and also is exposed in parts of a stripped area above the cut to the north and northwest.

The pegmatite body appears to be a large, irregular lens, the south margin of which is concealed on the slope below the Main cut (Pl. XXIII). It is elongate in an east-southeasterly direction, and may have a general dip to the southwest. All observed dips are moderate to steep, but few contacts are exposed. Northwest of the cut the pegmatite body splits into two north- to northeast-trending prongs, which are separated by about 25 feet of thinly foliated quartz-mica schist. This country-rock septum appears to taper downward. Similar irregularities in the pegmatite-wallrock contacts are exposed on the lower slope east of the cut.

A thin zone of quartz—albite—schorl—perthite pegmatite forms the border of the lens, and grades inward into a coarse-grained, perthite-rich wall zone. The intermediate zone, by far the largest unit in the pegmatite body, consists of coarse- to very coarse-grained blocky perthite, with subordinate quartz that occurs both interstitially and as scattered irregular masses that are 2 inches to 13 inches in maximum dimension. The core comprises numerous irregular segments of very coarse-grained anhedral quartz, the largest of which has an exposed length of 11 feet. Most of the pegmatite that appears on the face of the open cut represents the inner part of the intermediate zone. Here the coarse