

# INVESTIGATION OF TOZIMORAN PLACERS FIELD REPORT, OCTOBER 1985

## INTRODUCTION

Between October 22 and 25, 1985, J. Barker and D. Warner investigated the placer tin deposits and talked to the miner (Wayne Gibson) on Tozimoran Creek, which is located about 3 miles east of Moran Dome and 40 miles northwest of Tanana, Alaska. The investigation was spurred by the operator's discovery of a previously unrecognized type of cassiterite cobble in his concentrates. The presence of these cobbles was believed to indicate the presence of a proximal lode tin source. Field investigations, however, suggest the cobbles are not directly derived from a nearby lode; rather, they are likely derived from a newly discovered gravel bench.

## MINING HISTORY AND TIN PRODUCTION

Placer Au (and Sn?) was first discovered in the Tozimoran Creek area around 1902 (Chapman and others, 1963). However, only intermittent hand mining with a total production of a few hundred pounds cassiterite concentrate and several tens of ounces Au occurred until the present operator commenced mining in 1982(?). Little systematic prospecting or evaluation of the deposits has occurred; most work has been confined to a bench deposit located between 1000 and 1800 feet below the confluence of Ash and Tozimoran Creek. This deposit was alternately trench- and drill-sampled by both the U.S.G.S. and B.O.M. in the period 1942-44 and in 1952 (Chapman and others, 1963; Thomas and Wright, 1948).

Since 1981, the operator estimates a total recovery of approximately 30 barrels of concentrate averaging 65 pct Sn (approx. 35,000 lb) mostly from the bench deposit, with 4 barrels recovered in 1985 from 6000-7000 yd<sup>3</sup> and 11 barrels recovered in 1984. A relatively small fraction of the total production was probably derived from the lower portion of Ash Creek. An additional six barrels of cassiterite concentrate (approx. 7000 lb) were also recovered in 1984 from mining of the present creek gravels by J. Neubauer between the confluence with Ash Creek and the bench deposit on Tozimoran Creek. The operator estimates in excess of 40,000 yd<sup>3</sup> of placer reserves on the bench deposit. Cassiterite has been recovered within a sluice box and much coarse material is believed lost, however future plans call for the use of a jig to improve recovery.

## DESCRIPTION OF DEPOSITS AND RESULTS OF INVESTIGATIONS

Tozimoran Creek occupies a broad asymmetric valley with a moderately steep north-facing slope that is underlain by bedrock at relatively shallow depths and a gently sloping south-facing slope that is underlain by relatively thick deposits of colluvium, loess, and gravel. Most mining has been limited to a gravel bench that extends

along the left limit of Tozimoran Creek between 1000 and 1800 ft below its confluence with Ash Creek. The tin grade in this material is somewhat variable, but limited previous sampling by the U.S.G.S. and B.O.M. indicate it to contain in excess of 1 lb Sn/yd<sup>3</sup> over an area at least 900 ft long and 100(?) ft wide. The gravel is in excess of 3 ft thick, but pay is largely confined to the lower foot of the section and upper few inches of bedrock.

Trenches excavated during this investigation indicate that a previously unrecognized gravel bench (or series of benches) that is located about 80 feet above the mined bench extends easterly for at least 800 ft along the left limit of Tozimoran Creek beginning due north of its confluence with Ash Creek (see figure). As Chapman and others (1963) suggest, this bench was likely encountered in the northern 3 or 4 drill holes of drill lines 13 and 14, which are located approximately 1200 and 2400 ft east of the trenched area, respectively. Chapman and others, however, assume that the gravels encountered in these drill holes were correlative to gravels of the lower (mined) bench on Tozimoran Creek and did not recognize the presence of a higher bench. The extremely poor recovery of concentrates from the drilling precludes knowing the grade of the higher bench where drilled, however, results of the drilling do indicate this bench to contain grades at least comparable to those of the mined gravel (>1 lb Sn/yd<sup>3</sup>). Panning of gravel samples from the lower foot of gravel exposed in the trenches excavated in 1985 (see figure) also shows the presence of large amounts of cassiterite (1 pebble measures approximately 1 in wide) in addition to Au. Therefore, it is assumed that these gravels contain at least 1 lb/yd<sup>3</sup> with a 1-ft-thick paystreak.

#### TIN RESERVES AND POTENTIAL

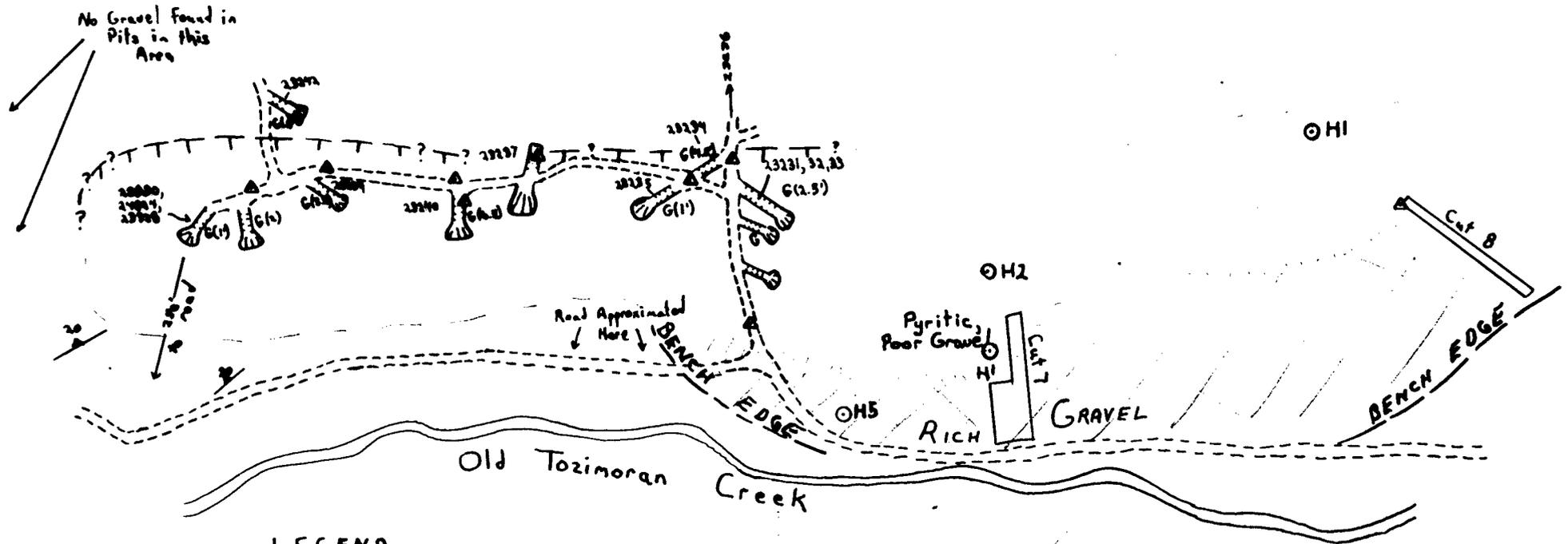
Relatively large, although inadequately delineated reserves of tin remain in the upper portion of Tozimoran Creek. In addition to the 40,000 yd<sup>3</sup> reported by the operator to remain on the lower bench, at least 650,000 yd<sup>3</sup> in an area 3200 ft long by 200 ft wide with a 1-ft-thick paystreak can be inferred in the higher gravel bench (see figure). At the assumed minimum grade of 1 lb Sn/yd<sup>3</sup>, this area contains approximately 650,000 lb Sn, or approximately 0.5 pct of Alaska's tin reserves.

Good potential for additional reserves (resources?) of tin exist on upper Ash Creek, where high Sn concentrations in fairly small volumes of gravel have been found (Chapman and others, 1963), on extensions of the Tozimoran bench(es) to the east, where samples from two prospect pits contained in excess of 0.3 lb Sn/yd<sup>3</sup>, and on other creeks, such as Wells and Melozimoran, that have bedrock geologies similar to that

of Tozimoran Creek. Potential also exists for a lode tin source, especially on upper Ash Creek where most of the tin appears to be derived. The lode source, however, may be somewhat widespread with cassiterite derived from small veins in the metasedimentary bedrock such as that sampled in 23330.

# Tape and Compass Map of Upper Bench Area, Tozimoran Creek, 1985 (JS, DW)

[Base from fig. 7, Chapman and others (1963)]



**LEGEND**

	Road
	Trench and Dump
	Survey Control Point
G(1.5)	Gravel present (Thickness)
23239	Sample
T	Approximate upper limit of bench

