TERRITORY OF ALASKA
DEPARTMENT OF MINES

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SUPPLEMENTARY REPORT ON THE MESPELT PROSPECT, TALKEETNA QUADRANGLE, ALASKA

75-48

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by

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The Mespelt prospect is on the north flank of the Alaska Range about six miles outside the southwestern boundary of Mt. McKinley National Park at 62° 52' N latitude and 152° 11' W longitude. It is in the Mt. McKinley Recording Precinct and in the northwestern part of the Talkeetna Quadrangle. The claims that cover the prospect are owned by I. W. Purkeypile and associates of Fairbanks; the location certificates for the claims are recorded in the records of the U. S. Commissioner at McGrath.

The geology of the region in which the prospect lies has been described in U. S. Geological Survey Bulletin 792-C, THE TOKLAT-TONZONA RIVER REGION, 1925, by Stephen R. Capps. The prospect was examined in 1948 by Bruce I. Thomas, Associate Mining Engineer, Territorial Department of Mines; the report of his examination is included in a Department of Mines report entitled: RECONNAISSANCE SURVEY, TONZONA DISTRICT, ALASKA, 1948, by Bruce I. Thomas. Copies of this report are on file at the Department of Mines offices at Juneau and College.

The prospect was examined on August 21, 1956, by Robert H. Saunders, Associate Mining Engineer, Territorial Department of Mines; this report is written from notes taken during that examination. U. S. G. S. Bulletin 792-C and the 1948 report by Bruce I. Thomas both describe many general features of the district, and that information will not be repeated in this report.

To reach the prospect a pontoon-equipped airplane was chartered to fly from Fairbanks to a small lake on the east side of Boulder Creek; the trip on foot from the lake to the camp near the Mespelt prospect required about three hours.

Mr. Purkeypile and his associates now own a group of contiguous claims that covers both the Mespelt prospect and the Jiles-Knudson prospect, which is on Boulder Creek about 2½ miles northeast of the Mespelt prospect. The Jiles-Knudson prospect is described in the 1948 report by Bruce I. Thomas, and nothing new of importance has been exposed there since that time. At the Mespelt prospect two new exposures have been made; one at the old Mespelt shaft and the other about one-quarter mile southwest of the Mespelt shaft. Relative positions of the major features near the Mespelt prospect are shown on Plate I in the appendix. The excavation near the Mespelt shaft exposes a zone that contains radioactive elements, and the excavation one-quarter mile southwest of the Mespelt shaft exposes a mineralized zone that contains silver-bearing galena. At both exposures the country rock is a part of a series of metamorphosed sediments, and both exposures are on the north side of a contact between the metamorphosed sediments and a granitic intrusive. A major fault that crosses central Alaska passes through the general vicinity of the prospect; no indications of this fault were noted in the field, but the fault can be traced readily on a relief map of the Territory.

Figure 3 shows the mineralized zone exposed in the hand-dug

pit near the Mespelt shaft. The zone strikes about S 60° E and dips southwest into the hill at about 45°. The footwall side of the zone is heavily stained with limonite; this material contains about 90 per cent iron oxides. The hanging wall side of the zone consists of gray-green, clay-like material, which contains about 68 per cent soluble sulfates and free sulfur, and the remainder is mostly iron oxides and quartz. Each of these two parts of the mineralized zone is about two feet thick.

A hole has been drilled with a "packsack" diamond drill into the hanging wall side of the vein. The direction of the hole is S 25° E at minus 15°. The depth of the hole is 32 feet. Drilling on this hole was stopped for the summer because of a shortage of water.

On the opposite side of the cirque from the Mespelt shaft there is a conspicuous notch in which lies what appears to be the extension of the mineralized zone.

Figure 4 shows the open-cut that has been dug on the lead-silver deposit one-quarter mile southwest of the Mespelt shaft. The excavation is 6 feet wide, 20 feet long, and 10 feet deep at the uphill end. About two tons of silver-bearing galena has been taken from this open-cut and from a small pit, now filled in, on the south side of the open-cut. The galena is in the form of lenses and irregular masses within a shear zone. The shear zone strikes N 35° E and dips to the southeast, into the hill. A part of the zone is exposed for a width of four feet; the total width of the zone is not exposed.

Six samples were taken during this examination; two were taken from the mineralized zone near the Mespelt shaft to be tested for uranium content (Samples 37, 38); one sample consisted of diamond drill cores from four different depths in the drill hole (Sample 39); two samples were taken from the small dump of galena near the lead-silver prospect (Samples 41, 42); and one sample consisted of float picked up on the north side of Little Mountain (Sample 40). Results of the assays are shown in Table I, and the locations from which the samples were taken are shown on Plate I. Samples 37 and 38 were assayed for radioactive elements by A. E. Glover, Assayer-Engineer, Territorial Department of Mines, Ketchikan; all the other assaying was done by Donald Stein, Assayer-Engineer, Territorial Department of Mines, College.

Both parts of the radioactive zone near the Mespelt shaft show evidence of oxidation. It is likely that the chemical processes that caused the oxidation also caused leaching of uranium from the upper part of the zone. In order to determine the amount of uranium present in the unaltered part of the zone, it will be necessary to intersect the zone below the depth of oxidation with diamond drill holes, a shaft, or a cross-cut. It is impossible to predict the depth to which oxidation extends.

Samples 41 and 42 indicate that the galena is rich enough in lead and silver to be a shipping ore if the orebody is large enough and if the galena is present in the mineralized zone in sufficient quantity so that not too much waste material has to be handled in mining.

TABLE I
SAMPLES FROM THE MESPELT PROSPECT

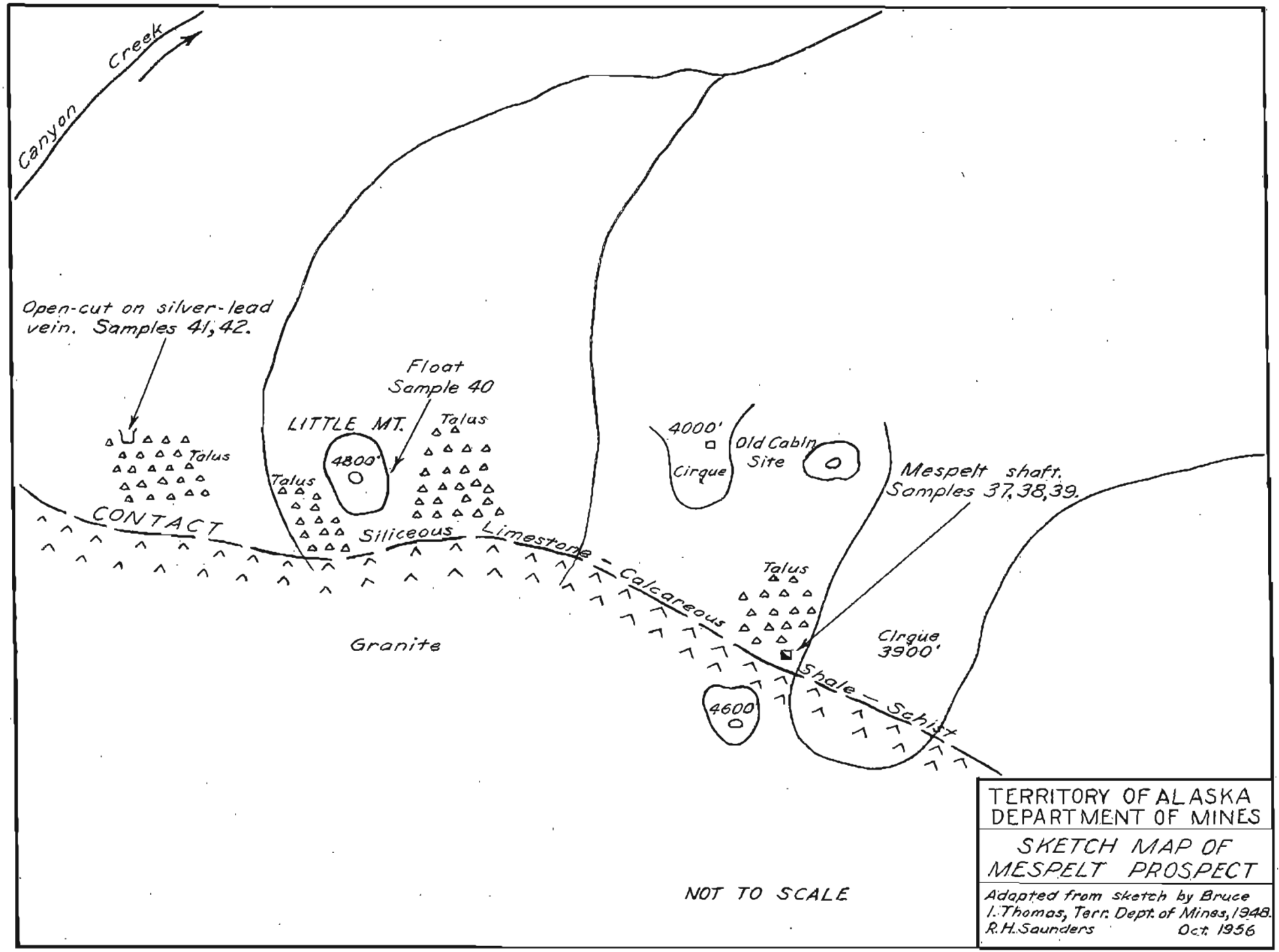
Sample No.	Location	Ounces per Ton		Per Cent		
		Gold	Silver	Lead	eU	U_3O_8
37	Near Mespelt shaft.	0.02	3.26	NR	0.15	0.02
38	Near Mespelt shaft.	0.04	0.42	NR	0.045	0.005
39	Drill Hole - 16 feet.	Pyrrhotite, no elements of value.*				
39	Drill Hole - 25 feet.	Pyrrhotite, no elements of value.*				
39	Drill Hole - 30 feet.	Pyrrhotite, no elements of value.*				
39	Drill Hole - 32 feet.	Pyrite.*			0.026	NR
40	Float from north side of Little Mt.	0.02	78.88	56.24	Nil	NR
41	Dump at lead-silver prospect.	0.06	63.08	39.4	Nil	NR
42	Dump at lead-silver prospect.	0.02	94.16	62.9	Nil	NR

*By spectroscopic analysis.

NR - Not Run.

Figure 1. Camp near Mespelt prospect.

Figure 2. View looking northwest from vicinity of Mespelt prospect.


Canyon Creek
Open-cut on silver-lead vein. Samples 41, 42.
Float Sample 40
LITTLE MT.
Talus
4800'
Talus
Talus
CONTACT
Siliceous Limestone
Calcareous
Granite
4000'
Cirque
Old Cabin Site
Mespelt shaft. Samples 37, 38, 39.
Talus
Cirque 3900'
Shale — Schist
4600'
NOT TO SCALE
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SKETCH MAP OF MESPELT PROSPECT
Adapted from sketch by Bruce I. Thomas, Terr. Dept. of Mines, 1948.
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Figure 3. Mineralized zone exposed near Mespelt shaft.

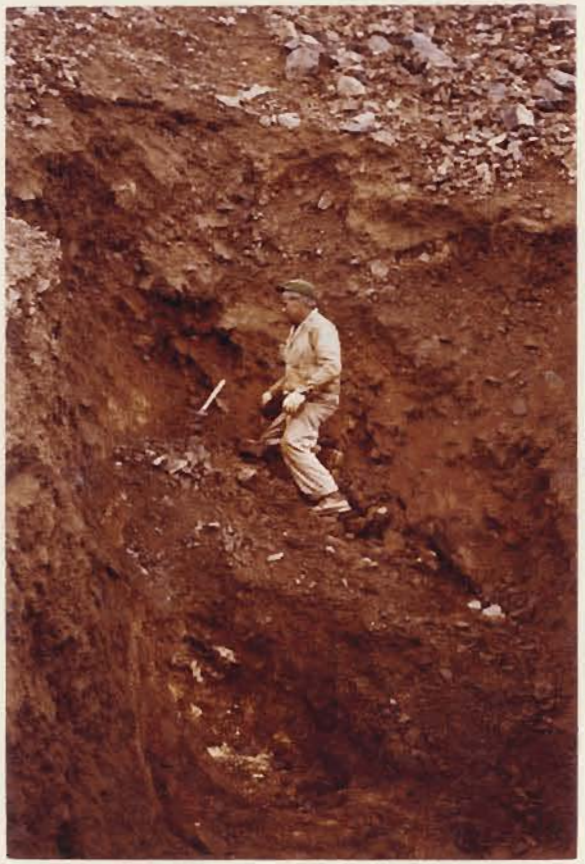

Figure 4. Open-cut at lead-silver prospect.