B.D.S. [Copy sent to Ramstad]

MR 81-2

MR Russian Missions

By Joesting

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PRELIMINARY EVALUATION OF PLACER GROUND ON BUSTER CREEK, KAKO DISTRICT, ALASKA.

MINEABLE AREAS

Computation of placer gold values in Buster Creek valley, based on logs of prospect drilling done by the Yukon Mining Co., of Anchorage, shows that there are two mineable areas, separated by ground too low grade to work. The upstream mineable area is only 1900 feet long, with an average width of 75 feet. Adjoining it on the downstream end is low grade ground extending for 750 feet, followed by the second, or downstream mineable area, which is 6000 feet long and has an average width of 100 feet. (See sketch map of Buster Creek and diagrams of upper and lower paystreaks.)

The Upstream Mineable Area

Gold values and volumes of overburden are shown in the accompanying data sheet. Based on a mining limit of 30¢ per cu. yd., the gross value of the upper ground is $85,700. Using the same limit, the gross value computed on the basis of bedrock area is $89,700. The mean of the two values is $87,700, or, approximately $87,000. The muck overburden is relatively thin and the volume ratio of muck to gravel is small, being about 3 to 10.

The Downstream Mineable Area

Computations based on a working limit of 30¢ per cu. yd. indicate that the gross value of the lower ground is $199,700; using the same limit, but computing on the basis of bedrock area, gives a gross value of $199,300. The mean value is $199,500, or approximately, $199,000. The muck overburden is considerably thicker in the lower, than in the upper area, while the average thickness of gravel is only slightly greater; therefore, the volume ratio of muck to gravel is much larger, being about 10 to 7.

Nov. 29-'40

DISCUSSION OF EVALUATION METHODS

The assumed working limit on Buster Creek of 30¢ per cu. yd. of gravel sluiced is based on the use of dragline, washing plant, pump and bulldozer, working under relatively favorable conditions, similar to those on nearby Bobtail Creek. However, since no data are available concerning mining costs in the Kako District, this working limit is only an approximation. The same limit is used for the upper and lower areas, because the greater volume of gravel in the lower area should be slightly cheaper to mine, thus more or less offsetting the higher cost of removing a greater volume of overburden.

After computations were made on the basis of a working limit of 30¢ per cu. yd., it was found that the paystreak is considerably narrower, and volume and gross value are correspondingly lower, than anticipated. The result is that mining costs will probably be considerably higher than 30¢ per cu. yd. Because the paystreak is narrow, there is in most cases only one pay drill hole on each drill line. The location of the working limit was determined by assuming a regular linear variation in gold values between the pay drill hole and the non-pay drill holes on each side. Although this assumption is only approximately correct, any errors are likely to lead to a conservative estimate of values, since the values in most paystreaks are more or less uniform over a considerable portion of their widths; at least they generally do not decrease as rapidly as assumed here.

No survey of the Buster Creek drill lines was made, therefore it must be emphasized that the computed areas, volumes and values are in error in proportion to the errors in the stated distances between drill lines and drill holes. Since the exact value of Buster Creek gold is not known, it is taken to be the same as Bobtail Creek gold, or approximately 0.1 cent per milligram. In view of the uncertainties that exist regarding mining costs and the locations of mining limits and of drill holes, as well as of the rough methods used to weigh the gold found in drill holes, the approximate value is sufficiently accurate for these computations.

CONCLUSIONS

The computed values and volumes may be in error because of inaccuracies and uncertainties indicated in the foregoing section; however, it is believed that the actual values are not less than stated. Although the narrow paystreak and the existance of ground too low grade to be worked between the upper and lower areas will probably result in mining costs higher than the assumed 30¢ per cubic yard, it is believed that the ground can be worked profitably with equipment on hand at Bobtail Creek. The upper area could be mined in one season and the lower area in about four seasons, yielding an average seasonal income of $57,000.

Before mining operations start several prospect shafts should be sunk for the purpose of determining the drill factor of the ground, that is, the ratio of actual values to values computed from drillogs. A drill factor may also be obtained after mining has started by comparing actual recovered values with computed values. In this manner, a corrected estimate of the gross value of all the workable ground may be obtained. Additional drill holes or shafts are also needed to determine more closely the location of the limit of pay on the various drill holes.

It is recommended that the upper area, where little stripping is required, be mined first. At the same time, water from the upper cut, with the possible assistance of a booster pump, could be used to hydraulic the overburden from the lower area. In this manner, stripping could be kept well ahead of mining.

Henry R. Joosting,
Assoc. Mining Engineer,
Department of Mines.

DATA SHEET

PAYSTREAK - UPPER BUSTER CREEK

Block No.	Area Sq. Ft.	Muck Cu. Yds.	Gravel Cu. Yds.	¢-Cu. Yd. of Gravel	¢ - b.r.f.	Total Value (Cu. Yds.)	Total Value (b.r.f.)
1	56,000	14,500	37,000	99.0	65.7	36,600	36,800
2	51,000	7,550	31,200	122.0	79.0	38,300	40,200
3	33,750	2,770	13,500	80.6	37.6	10,800	12,700
	142,750	24,820	81,700	105.0	63.0	$85,700	$89,700

PAYSTREAK - LOWER BUSTER CREEK

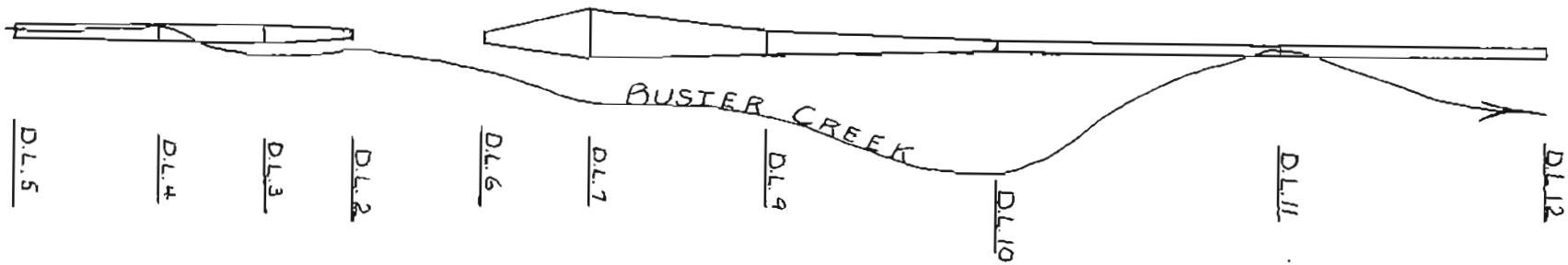
Block No.	Area Sq. Ft.	Muck Cu. Yds.	Gravel Cu. Yds.	¢-Cu. Yd. of Gravel	¢ - b.r.f.	Total Value (Cu. Yds.)	Total Value (b.r.f.)
4	97,500	70,000	50,500	78.8	40.0	39,800	39,000
5	212,500	169,000	126,000	69.0	41.4	87,000	88,000
6	136,500	125,000	79,000	38.0	22.2	30,000	30,200
7	92,000	105,000	67,500	33.6	23.8	22,500	21,900
8	75,000	56,500	59,000	34.5	27.0	20,400	20,200
	613,000	525,000	382,000	52.0	32.6	$199,700	$199,300

PAYSTREAK - UPPER and LOWER BUSTER CREEK

Total Area Sq. Ft.	Total Muck Cu. Yds.	Total Gravel Cu. Yds.	¢ - Cu. Yd. Of Gravel	¢ - b.r.f.	Total Value (Cu. Yds.)	Total Value (b.r.f.)
765,750	549,820	463,700	61.5	38.2	$285,400	$289,000

Calculated by Al. Malden,

Territorial Department of Mines.



POSSIBLE MINING AREA ON BUSTER CREEK

SHOWING RELATION OF PAYSTREAK TO PRESENT DRAINAGE

SCALE 1" - 1000'

NOV. 1940

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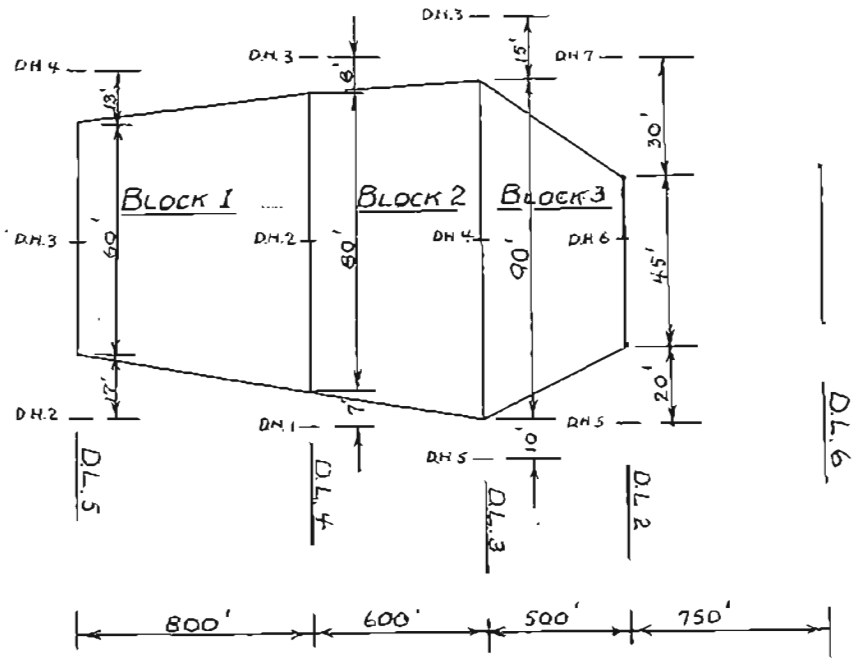

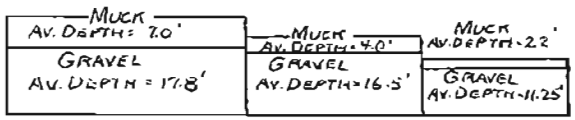

PAYSTREAK – UPPER BUSTER CREEK

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PAYSTREAK — LOWER BUSTER CREEK

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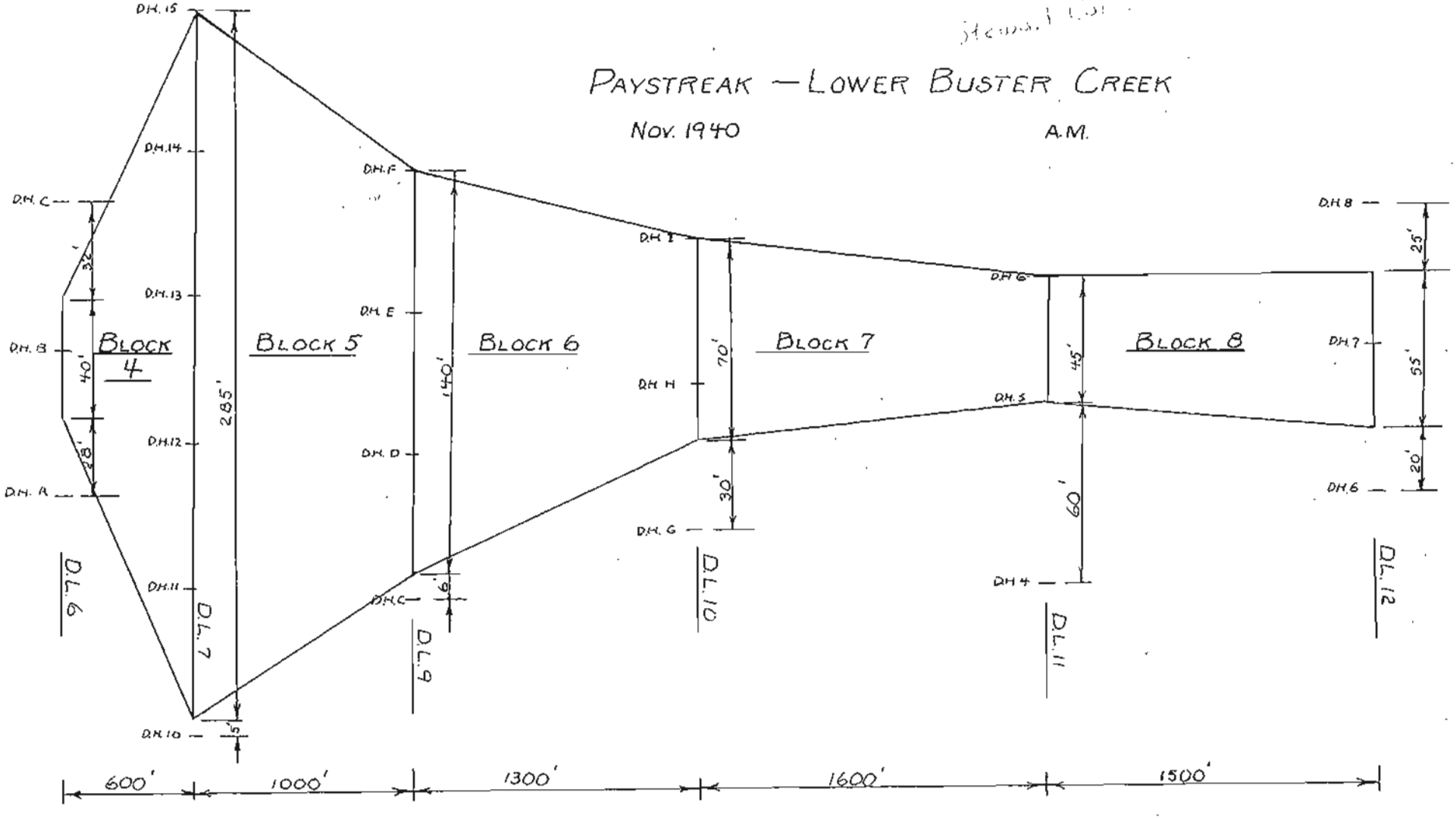

MUCK Av. DEPTH = 19.4'	MUCK Av. DEPTH = 21.5'	MUCK Av. DEPTH = 24.7'	MUCK Av. DEPTH = 30.8'	MUCK Av. DEPTH = 20'
GRAVEL Av. DEPTH = 14'	GRAVEL Av. DEPTH = 16'	GRAVEL Av. DEPTH = 15.4'	GRAVEL Av DEPTH = 19.8'	GRAVEL Av DEPTH = 21.2'

ODS B.D. Stevens copy

College, Alaska
September 11, 1940

Mr. Joseph Ramstad
Yukon Mining Co.
Russian Mission

Dear Joe:

According to our agreement I am sending you copies of the map showing the results of the magnetometer work and of the geologic map of the Kako Creek area. I would have sent this material sooner, but it was necessary to wait until the geologic map was completed; also there was considerable work awaiting us when we returned to Fairbanks which had to be attended to.

The double shaded areas on the magnetometer map (▨) indicate the locations of possible placer concentrations, the single shaded areas (▨) are areas where irregular magnetic conditions in the bedrock did not permit prospecting for placers by magnetometric methods.

Concerning the areas indicated as containing possible placers, it is difficult to state definitely which are most likely to contain pay, or even which are richest, since there was no opportunity to carry out detailed magnetometer work around them. In this connection I would like to warn you that detailed work might have proved some of these areas to be blanks. The only way now to tell for certain is to drill them.

I have attempted to evaluate the various areas using what information is available; those considered as most likely to contain placers are marked I, those considered to be possibilities are marked II, those considered to be doubtful are marked III, while those considered to be the least likely areas are marked IV. This evaluation or estimate is based for the most part on indications afforded by single magnetometer lines and as stated before, additional work might change the evaluation.

On the left limit of Windy Creek, between Bobtail and Buster Creeks, small magnetic anomalies were encountered on each of the three magnetometer lines, near stations 18, 10 and 5, on Lines 1, 2 and 3, respectively. Their small size indicates that a correspondingly small amount of placer concentration has taken place and consequently, it is unlikely that these areas contain pay. It is also considered unlikely that a definite paystreak or concentration in a single channel exists in this area, although additional detail would be necessary in order to determine whether or not the anomalies are connected.

A small anomaly extends from station 7 to station 10 on line 1, on the left side of Windly creek. This area apparently does not connect with any other indication of placer concentration.

On the right limit of Windy Creek moderate sized anomalies exist on the right side of the Bobtail Creek drain and below the mouth of Montezuma Creek, as shown on the map. The area near the drain shows fairly good indications of placer concentration. It is considered likely that the area below Montezuma Creek may be connected to the thick gravel deposit on the right limit of lower Montezuma Creek;

Nov 29 19

in this case the area near the drain represents merely a local concentration rather than part of a paystreak.

The small size of the magnetic anomalies and their apparent lack of continuity are considered as unfavorable indications for the existance of continuous placer concentration on Windy Creek between Bobtail and Buster Creeks. However, since pay may be found in some of the spots or areas, it is recommended that the indicated areas be drilled.

The magnetometer lines run across lower Kako Creek valley are too far apart to give definite information about the existance of a continuous paystreak. However, in view of what is known about Windy Creek and other nearby tributaries, it is considered unlikely that a continuous paystreak exists in lower Kako valley.

It will be noted that the possible placer anomalies are located near small tributaries of Kako Creek. The one between stations 64 and 70 on Line 3 may be caused partly by deposition by the tributary and partly by reconcentration of Kako Creek gravel. Those on Line 2, if they are related to placer concentration, are more likely to be caused by deposition of gravel by Kako Creek. Sufficient measurements were made of the anomaly between stations 34 and 37 on Line 2 to show that its trend is parallel to Kako Creek.

It is recommended that the areas indicated on Lines 2 and 3 be drilled, since there is a better chance of finding pay in these areas than by random drilling. It should be kept in mind, however, that we can give you no information about placers in the areas where basic bedrock occurs, nor in areas outside of the magnetometer traverses. The chances of finding pay appear to be better in the upper than in the lower part of the creek.

The following data concerning ~~required to run~~ the magnetometric and geologic surveys may interest you.

Magnetometer stations occupied	602
Miles of magnetometer lines run	14.9
Elapsed time for field work (June 25 - Aug. 8)	45 days

Time required to complete various parts of magnetometer survey:

	Days	Man-days
Brushing out magnetometer lines	10 1/4	23
Surveying magnetometer lines	10 7/8	21 1/4
Occupying 602 magnetometer stations	19 7/8	35 1/4
Office work (maps, calculations)	10 1/8	17
Travel	3	6
	54 1/8	102 1/2

Time required for geological surveys:

	Days	Man-days
Field work	37 3/8	58 3/4
Office work	5	8
Travel	3	6
	45 3/8	72 3/4

Cost of field work:

Traveling expenses		$727.00
Living expenses at Bobtail Creek (estimated)		240.00
Wages of field party		1365.00
Wages of Charlie Wolf (2 days at $6.00)		12.00
Extra expenses of geological party:		
Food bought at Russian Mission	$9.50	
Food bought at Bobtail Creek	28.65	
Meals at Bobtail Creek	32.50	70.65
Telegrams		6.98
Freight on rock specimens, and equipment		5.98
		$2427.61

Paid by Yukon Mining Co.:

Traveling expenses	320.00
Living expenses (estimated)	240.00
Wages of Charlie Wolf	12.00
	$572.00

Paid by Department of Mines: $1955.00

The actual cash expenditure by you for our living expenses was somewhat less than indicated above, because your mess expense, excepting the cost of food, was practically the same regardless of whether we were there or not. That is, about the only additional mess expense to you was the grub we ate, the cook's wages, etc., being constant.

It probably would be advisable to regard the above cost data as confidential.

There is one item that I don't have on my expense account, but which I am pretty sure I paid, and that is for meals eaten at camp while we were waiting for the plane. It seems to me that I paid you about $12 for those extra meals, but my receipts show only what I paid for Fox's meals. If you remember about my having paid this, will you please send me a receipt for the amount paid, stating also what it was paid for. If I forgot to pay it because of the last minute rush, please send me a bill and I will pay it now.

The cost of carrying out the field program in the Kako area was somewhat higher than usual, for the amount accomplished, for several reasons: first, on most magnetometer surveys only 2 men are needed, since ordinarily the work is done in regions where the geology has already been mapped; second, the ground conditions, i. e. brush, moss and swamps, were somewhat worse than average; third, the fact that we had to do our own brushing instead of having it done by cheaper labor slowed down the magnetometer work and increased the cost per station; and fourth, the presence of greenstone and other basic bedrock necessitated the occupation of an unusually large number of magnetometer stations to cover a given area.

I wrote to Stewart asking about the possibility of refunding to you Fox's airplane fair to Fairbanks. He answered that it would be advisable to repay this money to you, since it is important that the Department of Mines does not become obligated to any private operator. However, he did not state whether he or I should send you the money, so it will be necessary for me to get this point cleared up before making any refunds.

In looking over your drill values for Buster Creek, it appears that the ground is far from being a bonanza, in fact, you would probably have to mine for not more than 30¢ per cu. yd. to get a decent return. We are trying to work up the values and yardages and we should be able to give you an approximate idea of the recovery to be anticipated. If the figures are ready by the time the blueprints that are now being made for you are finished, I will send them with this letter.

If you will let me know what your anticipated costs of handling overburden and gravel will be, we can give you more accurate estimates of values and yardages. We are calculating values on the assumption that no casing shoe was used during the drilling on Buster Creek, and that volumes were all normal. We, of course, know nothing about the drill factor, that is, how the values as indicated by drilling compare with the actual recovery.

If any part of the stuff I am sending you is not clear, please telegraph me and I will try to straighten it up by telegram. If you or any of the others come out via Fairbanks, you might give me a phone call. There are several things about the magnetometer work, and particularly about the drilling on Buster Creek, that I would like to talk over with you.

One copy of this will be sent to Nulato in a P.A.A. plane to catch the river steamer. The drill results will probably be sent on the last mail, or, if I hear of a plane leaving from here or from Anchorage, I will send them by plane.

Best of luck with the prospecting.

Sincerely,

C.C. Joe Ramstad
B.D. Stewart

Henry R. Joesting,
Assoc. Mining Engineer.

Note: (to B.D. Stewart)
Ramstad was in Fairbanks recently and expressed himself as being well pleased with the results of our work, although during our stay ~~there~~ at his camp last summer I got the impression that he wanted faster action. The fact that they drilled and mined a small area last fall on the south side of the Bobtail Creek drain (marked I on accompanying magnetometric map), probably helped convinced him that we have something on the ball. This area is the only one that I could recommend as being at all favorable for placer. Their prospecting seems to indicate, also, that no pay streak exists on Windy Creek.

H.R. Joesting.
Nov. 11, 1940