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C. D. STEWART

REPORT

JACOB MARTY MINES  
at  
WINDHAM, ALASKA

115-8  
115-28

Location:

The Jacob Marty Mines are located at the head of Spruce Creek  $1\frac{1}{2}$  miles due east of the town of Windham, Alaska, which is situated on the extreme eastern end of Windham Bay. Windham Bay extends 8 miles inland from the point where Stevens Passage joins Fredrick Sound.

Windham is on the mainland 65 miles by water southeast of Juneau and 60 miles by water northeast of Petersburg, Alaska. (See Geol. Recons. Map attached for location.) These two towns serve as mail and merchandise bases, there being no store at Windham.

Communication

Windham has a U. S. Postoffice 4th Class served by a mailboat plying weekly between Juneau and Petersburg. This boat leaves Juneau each Wednesday at 1 p.m. with mail and freight and arrives at Windham each Thursday at 9 a.m. Returning, it leaves Petersburg each Friday at 10 a.m., reaches Windham at 9 p.m. on Saturday, leaves at 2 a.m. Sunday and arrives at Juneau at 5 p.m. the same day.

U. S. Mail affords the only communication with Windham, the nearest telephone, telegraph or wireless stations being at Juneau and Petersburg. Incoming telegrams should be prepaid to Juneau with address-instructions to "mail to Windham."

Transportation

Windham Bay is in deep water permitting the call of large ships. The Motorship "Oregon" out of Seattle twice per month will call to discharge a load of 10 tons or more on any trip. Larger ships will call to load or discharge 40-50 ton shipments or by special arrangement. Transportation of personnel and routine supplies for the mine is furnished by the mail boat on its regular weekly trips.

The Marty interests own a sea-going cabin gasboat "Enterprise," 30 feet in length with a speed of 7 knots, which is maintained for emergencies and for the transportation of powder, gasoline, etc. which are banned by regular freight and passenger carriers. It is found cheaper, however, to handle regular shipments thru the scheduled mail boat.

There is no dock at Windham and freight, mail and passengers are debarked on a float fitted with a freight house. Transfers to shore are made by rowboat or freight scow.

Transportation of supplies to the Marty Mines is carried on by tractor to a freight house  $\frac{1}{2}$  mile from the camp. From this point, supplies are man-packed to the camp as the trail will not permit the passage of tractor or mules in its present condition. Heavy machinery must be brought up from the beach by donkey and sleds. Such a rig is available at Windham.

### Topography

The topography of Windham Bay is similar to that of all southeastern Alaska--the mountains rising rapidly from the shoreline. The eastern end of Windham Bay has been partially filled with silt from the Chuck River and tailings from old placer operations. As a result, Windham was built on an attractive flat where the tide ebbs and flows for 1200 feet.

The Jacob Marty Mines are situated 925 feet above sealevel at the head of Spruce Creek Gulch which is surrounded on the north, east and south by mountains rising abruptly to a height of 2550-4350 feet and thru this gulch Spruce Creek flows to Windham Bay. The Marty Mine Camps are located in the head of this gulch and are well protected from severe winds and storms.

### Timber

The terrain is heavily timbered from tide water to an altitude of approximately 2500 feet. From this point upwards, the timber gradually thins and becomes of poor quality until, at an altitude of 4000 feet, little timber is encountered. At the lower altitudes, prospecting is made extremely difficult and slow due to the heavy growth and underbrush.

Ample timber of good quality is available on the Jacob Marty holdings for all necessary construction and mine timbering. There is little suitable timber on the Fairview and other claims above 2500 feet in altitude, but no need for same exists on the summit.

The Marty holdings also include a timber and sawmill site 3 miles down the bay from Windham and at this point large quantities of excellent timber are available for all purposes with ample power for sawing and other operations.

### Pests

The properties under discussion are very free from pests of all kinds. Mosquitoes, black flies and "no-see-ums" (a minute fly) are present to some extent during June, July and a part of August, but they are not bothersome to the extent encountered inland. Rodents are scarce, snakes unknown, and the few wolves to be found present no danger. No poisonous plants are known to grow on any of the Marty holdings.

### Climate

Climatic conditions are excellent for mining operations in this district. The rainfall averages 80 inches per year as compared with 74 inches at Juneau and 115 inches at Ketchikan. Summer temperatures average 50-85 degrees F. with very few days at the latter figure. The winters are mild. The average temperature being approximately 22 degrees above zero. ~~Season~~ does the mercury drop to zero and then for a few days only. An average snow fall of six feet is encountered at the Marty camps in winter. On the higher properties to the north and south such as the Sylvia, Fairview and Great Mine properties, the snow gets much deeper and will interfere with winter operations other than those conducted thru the Basin Queen Tunnel.

Windham Bay has not frozen over in the last 9 consecutive winters. In such an event, the regular deliveries of mail and freight are made at the Government "Mail-house", outside the narrows, where the channel never freezes. This is 5 miles down the bay from Windham and connected therewith by Government trail.

NAMES, TITLES & AREAS OF PROPERTIES COMPRISING THE MARTY MINES.

Silent Partner No. 7	Title - Possessory.
" " " 6	" 115-8
" " " 5	"
" " " 4	"
" " " 3	"
" " " 2	Patented } 115-28
" " " 1	" }
Falls Claim	
Basin Queen	Possessory
Acme	"
Acme Extension	"
Great Secret (not on map)	"
Sylvia	"
Sylvia Extension	"
Fairview	"
North Star No. 1	"
" " " 2	"
Silent Friend Mill Site Claim	"
Great Mine No. 1	"
" " " 2	"
" " " 3	"
" " " 4	"
" " " 5a	" 115-8
" " " 6b	"
" " " 7a	"
" " " 8	"
" " " 8a	"
" " " 9	"
" " Terminal	"
" " Extension	"
Free Gold Shaft Mine No. 1	"
" " " " 2	"
" " " " 3	"
" " " " 4	"
" " " " 5	"
" " " " 6	"

Total 35 $\frac{1}{2}$  Claims

Approximate area is 700 acres.

The title to the Patented Mineral Claims is absolute and indefeasible. The title to the unpatented claims is "possessory", i. e., held by discovery, location and possession by completing and recording the required amount of work (assessment) per annum in accordance with the U. S. Mining Laws and the Territorial Laws of Alaska.

In addition to the above claims, which are intended for mining operations exclusively, the Jacob Marty Mines also possess the following acreage:

Peerless Mill Site (2300 ft. east of Windham) Possessory Title.  
Peerless Tunnel Site (same location)  
Sawmill & Timber Site (3 miles down Windham Bay)

Mr. Jacob Marty has acquired title to all the above properties either by Original locations, cash purchase or contract to purchase; and is the sole owner at the present date.

### Buildings

The Jacob Marty Mines own the following buildings:

Sawmill and Quarters on Windham Bay.  
1 house, 4 rooms, 2 story, at Windham.  
1 house, 3 rooms,  $1\frac{1}{2}$  story, at Windham.  
1 bungalow, 2 rooms, 1 story.  
Sawmill Bldg. 24' x 60' at Marty Mill Site  
Supt. House & Office at the Marty Mines Camp.  
Messhall and Kitchen " " " " "  
Bunkhouse for 15 men " " " " "  
Compressor-house " " " " "  
Blacksmith-shop " " " " "  
Mining Mill Bldg. (corrugated Iron) " "

4 cabins, suitable for 4 or 5 men, are located on the Basin Queen, Sylvia, Sylvia Extension and North Star No. 2 respectively, and 4 Blacksmith shops are conveniently located on the same properties and fully equipped for sharpening hand steel.

### Equipment

The Jacob Marty Mines own the following equipment:  $\frac{1}{2}$  interest in the Covered Landing Float in Windham Bay, "The Enterprise," Gasboat, 2 cabins, 25 h. p., 7 knots, 38' overall Union Gas Boat, 3 h.p., one cabin, 1 - #3 American Sawmill, Edger & Planer (stored at Windham)  
1 - #1 $\frac{1}{2}$  " " at the Marty Mill Site  
1 - Holt Tractor, small model, 2 sleds for trailers  
Full B. S. equipment at Mine Portal for sharpening machine steel, 725 feet  
Ore Car Track, 12# complete with fish plates, spikes and bolts  
2 - one ton ore cars  
1 - 50-100 ton Amalgamating Mill, complete and new, including:  
1 - 7 x 10 Blake Crusher  
1 - 10' Lane Mill  
1 - Automatic Disc-type Feeder for same  
1 - Ferguson Concentrating Table  
4 - Amalgamating Plates (cu) 5' x 8' (not in place)  
1 - 24" Pelton Impulse Water Wheel complete with  
220' - 14" Penstock, #16 iron  
70' - 12 " " "

- 1 - Rand 2 Drill Compressor belt driven from
  - 1 - 36" Pelton Impulse Water Wheel supplied by 470' - 9",  
12" & 14" Penstock (#16 ga. iron)
  - 982' - 3" Air Line
  - 200' - 2" " "
  - 1 - #7 Denver Rock Drill complete, new
  - 1 - DR #6 Sullivan Rock Drill (as spare)
  - 150 Pcs. 1½ round, hollow machine steel
  - 50 pcs. 7/8" hex. hand steel
  - Hammers, tools, axes, bars, shovels, etc.
  - 500' - 1½ Water Pipe
  - 200' - 1" Water Pipe
  - Cookhouse equipment for 12 men with Majestic Hotel Range (1-oven)

#### Present Water Power

470 feet from the compressor and 290 feet from the Amalgamating and Concentrating Mill is located one common intake serving the two Pelton Wheels in operation at present. This is fed by 50 feet of 3' x 4' flume tapping Spruce Creek at an elevation of 100 feet above the Peltons. The low head available necessitates large nozzles and an average flow of water to operate at full capacity in both mine and mill. However, during any normal season, ample water is usually available for both purposes.

Operations by water power are normally possible from early spring until mid-November. A severe cold snap in mid-winter would close a part of all operations for a time, but protracted cold snaps are infrequent and operations during a reasonable part of each winter may be expected with the present installation. Often, operations for the full 12 months without interruption is possible as was the case in the winter 1925-1926. No other conditions than lack of water for power will prevent continuous operations all winter long, providing, of course, that such operations are carried on in or from the present drift on the Basin Queen property.

#### Proposed Water Rights and Powers

Surveys and data have been completed for three additional Water Powers to protect future needs and applications for same in regular form will be filed by the Marty Attorney at Juneau as soon as he receives certain maps now in the making.

These filings will also protect the water power now being utilized against diversion above the Marty intake.

The first Power Project includes the construction of a dam on Spruce Creek at the lip of the Fourth Basin, altitude 1775 feet, and east of the present Marty Mill shown on the map. The Basin is fed by a perpetual glacier located on and extending easterly from the Navaho-Nepache Group on the summit. The outlet to the fourth Basin is very narrow and a dam 50 feet long and 20 feet high will conserve a full season's run of water. This water will be carried in a suitable penstock to the Marty Plant, furnishing a head of 775 feet and a nozzle pressure of 333 lbs. per square inch. At this head, 150 minute feet of water will develop 100 H. P. From three to five times this amount of water is perpetually available at this point which will insure ample power for all operations until such time as large low grade milling operations are undertaken.

The second power project consists in diverting the available water from the SW. corner of the Acme Extension property into a penstock to follow the middle line of the Sylvia and Basin Queen properties and delivering it where desired at the Marty Plant. The working head here will be 400 feet and the pressure developed 170 lbs. Additional water from the south end of the North Star No. 1 property will also be diverted into the same supply by a branch or "Y" penstock. While furnishing approximately the same amount of water, this project will develop less power than the first because of the lower head.

The third Power Project calls for the construction of a small dam (see map) on the Silent Friend Mill Site Claim and the extension of the present penstock, which runs from the Marty Mill Site to a point on Spruce Creek directly south of the freighthouse to the proposed dam site. This will give additional head and more power on the same water consumption. This power may be developed Hydro-Electrically and carried to the Marty Mines when required.

The costs of any one of these three projects will amount to little--labor being the principal and largest item. The proposed dams are small and material available for them. The cost of the required penstocks will run from 40¢ to \$2.00 per foot for the "high-head" pipe plus transportation and labor.

The filings on these power projects is purely precautionary. There is ample power now hooked up at the mines to carry on the proposed operations herein recommended for a considerable period of time to come.

### History

In discussing the Jacob Marty properties, it is interesting to recall that the first gold discovered in Alaska and the first placer operations carried on successfully were on Spruce Creek which flows from the Marty Mines into Windham Bay. The year of discovery was in 1852. Some years later Spruce Creek was washed from end to end and paid an average of one ounce per day per man, i. e. \$16 per day per man which was a very high wage in 1880-1890.

Later came lode mining which was carried on with varying success for many years, 1902-1903 being the years of greatest activity. Good returns were produced in several instances but the fact is apparent that no methodical prospecting was done on the properties now under discussion. The original prospectors either overlooked the vein systems on the present Marty holdings or failed to appreciate their importance. It is only within the last 24 months that the showings to be discussed in detail later were intelligently opened up and much of this credit is due to Gudmund Jensen of Juneau who has worked untiringly. It is pertinent to recall that these properties all lie at the head of Spruce Creek and drain into the same. From this source of drainage almost entirely came the placer values which were successfully mined in the years following 1852. The erosion of the gold bearing leads caused these values to be broken off, washed down and deposited where later recovered, thus giving proof at that early date of the presence of these rich fissures which we are about to discuss.

### General Geology

The Windham Bay District is situated on the lower end of the Juneau Gold Belt, which is a band of alternating schists, slates and greenstones extending along the Coast for 120 miles from Eagle River on the north to a point well below Windham Bay to the South.

During the period of metamorphism, the formation was badly fractured. These fractures, thus opened up, were later filled with quartz from aqueous solutions which also carried valuable minerals, mostly gold; but also some silver, lead, zinc and iron. These fractures appear in the slates and schists as stringers of quartz varying in width from a fraction of an inch to several feet in instances. Most of these quartz stringers are short but many can be traced for hundreds of feet.

Where fracturing has been intense, zones of numerous quartz stringers occur. These zones of small stringers form the large bodies of uniform low-grade ore that is present in large quantities. Considering this district as a whole, it would be impracticable to attempt to mine alone, in most instances, any high-grade stringers which frequently occur in the low-grade orebody; but, by mining the whole zone of mineralization it affords an immense body of low-grade ore of good commercial value which can be treated profitably on a large scale for years to come.

However, the properties under discussion present a phase at variance with this general condition and this difference will be discussed fully under the proper heading.

To prove my contention as to the strength and value of this district in general and the Jacob Marty Mines in particular, allow me to direct your attention to the U. S. Geological Reconnaissance Map of S.E. Alaska (attached) and to quote from the U. S. Geological Survey Bull. No. 345 as follows:

#### "Relation of Intrusive Rocks to Mineralization"

"The general geologic investigation of southeastern Alaska has shown that most of the mineral deposits so far discovered occur in proximity to areas of dioritic rocks. The great masses of diorite are themselves practically barren of orebodies. The conclusion has been drawn, from the clustering of mineral deposits around intrusive centers, and from other facts, that the mineralization was an effect of the diorite intrusions; that the mineral bearing solutions were deposited in the cooler surrounding rocks. The connection between intrusion and mineralization in southeastern Alaska is most clearly and forcibly illustrated by the copper deposits of Kasaan Peninsula and the Hetta Inlet region. These deposits are commonly situated at or near the contact of the limestone with the intrusive dioritic rocks and form high irregular masses and lenses imbedded in the limestone. \* \* \* These deposits belong to so-called contact-metamorphic type of orebodies and their mineralogic make-up shown that they were formed under conditions of high temperature conditions obviously accompanying the intrusion of the diorites.

"The gold quartz deposits are less evidently of magmatic origin than are the contact-metamorphic copper ores. The gold orebodies are found at GREATER DISTANCE FROM THE INTRUSIVE MASSES, and payable deposits are not found in the schists flanking the intrusive rocks. \* \* \*

"The extensive masses of dioritic rocks that invade Chichagof and Baranof Islands are a favorable geologic feature. The known auriferous mineralization took place subsequent to the injection of the diorite-aplite dikes and the probability is it was an effect of the great diorite invasion. It is reasonable supposition, therefore, that if the mineralization follows the same laws that are believed to hold for the rest of southeastern Alaska, the long zones flanking the diorite belts constitute the territory in which other orebodies than those now known, are most likely to be found."

Referring to the U. S. Geologic Map attached, it is found that the Jacob Marty Mines lie exactly between two well-defined zones of intrusive rocks, to the east and west respectively, but AT SOME DISTANCE FROM THEM, which is as it should be. Referring also to the formation on Chichagof Island, which lies just west of Windham Bay, it is to be noted that similar geologic conditions are to be found in the Jacob Marty Mines. Recalling the fact that the Chichagof Mines have produced millions in dividends in a geologic formation similar to that encountered on the properties under discussion, it is reasonable to expect similar results, to a greater or less degree, may result from the development of the Jacob Marty Mines to an equal extent.

Similarly, in discussing generally the Juneau Gold Belt, it is important to remember that such mines as the Treadwell Group, Alaska Juneau, Perseverance, Ebner, Alaska-Gastineau and Eagle River Mines lie in the same Gold Belt and their successful history is common knowledge.

#### Local Geology

Three known zones of mineralization occur immediately east of Windham Bay.

The first is  $3/4$  mile from the Bay and is occupied by the Red Wing Patented Group consisting of 7 and 8 fraction claims.

The second zone is  $1\frac{1}{4}$  miles from the Bay. The Jacob Marty Mines are staked on and include the main orebody of this zone which is wide and of great length. It is easily traced and followed from Sylvia Creek on the south to the point where it passes under Endicott Arm to the north.

The third zone is still further to the east and is included in the Windham Chief Patented Group and the Free Gold Shaft Mines owned by the Jacob Marty Mines.

The width of each zone is 300-600 feet and they are practically parallel.



The Jacob Marty Mines embrace the entire second mineralized zone, from 300-600 feet in width and more than  $3\frac{1}{2}$  miles in length extending from Sylvia Creek to Endicott Arm. They also embrace a large portion of the third mineralized zone as previously mentioned and shown on the accompanying map.

As we traverse the second zone southward on the main ore system to the Fairview and Great Mine properties, a change in conditions rather than formation is encountered. On the Fairview property, a less intense fracture is evident. Instead of the orebody presenting a mass of small quartz and schist stringers alternately, larger and fewer fractures are encountered which have been filled with quartz in quantities, with blackjack and iron and copper sulphides also noticeably present. One large fracture of vein runs from the north to the south end lines of the Fairview and extends on to the adjoining properties in both directions. The distance of this extension is unknown on the Sylvia Extension property, but it can be traced for several claims on the Great Mine Group. This is a well defined vein of quartz varying in width from 10"-24" and carries continuous rich values of free milling gold readily visible to the naked eye. The walls are free.

It is not unlikely that this gold bearing lead is paralleled by other similar and well defined leads in the same dike.

#### Developments

The Silent Partner Claims Nos. 3, 4, 5, 6 and 7 have not been developed past the prospecting stage. Examination discloses the main ore system of the second mineralized zone running throughout their entire length. On the divide between Spruce Creek and Endicott Arm, several strong quartz veins occur carrying moderate values. There isolated positions until combined with the Jacob Marty Mines accounts for their never having been previously worked.

On the Patented Claims Silent Partner Nos. 1 & 2 and the Falls Claim, some \$40,000 was expended by the original owners, the Helvetia Mining Co., in equipment and long crosscut tunnels driven into the mineralized belts of schist, and quartz stringers were followed by drifts. In 1906, test runs were made in the 10 stamp mill then located on the Red Wing Group, but finances were not produced to continue permanent mining. It is reasonable to believe that this development work was done in the wrong location and direction, and, further, that proper development will reveal commercial values in the main orebody, the same as exists at other points.

The Basin Queen has been opened up by a drift on the main ore system 540 feet in length with 315 feet of crosscuts. Free gold values visible to the naked eye have been uncovered in the low grade orebody. 150 feet above this main drift, a shorter drift was previously driven in the same orebody and here free gold showings were more numerous.

On the Sylvia and Sylvia Extension, development work has been done sufficient to keep these claims in good standing for many years past. Stripping has been done to prove the location and continuance of the

main ore system. Opencuts have been made where indications suggested. Considerable drifting and cross-cutting has been done in one particular spot and ore averaging \$1.80 across 7 feet has been exposed. It is further known that the rich, free milling ore chute opened up on the Fairview property, which will be discussed in detail later, extends for an undetermined distance on the Sylvia Group.

On the Fairview property, excellent development work has been done. The high-grade vein has been opened up sufficiently to trace it 15000 feet - completely across the property from end to end. It is also easily picked up and traceable across the south end line on the adjoining Great Mine properties. On the Fairview, this vein is exposed as follows:

60 feet from the north end line	
150    "    "    "    "    "    "	
750    "    "    "    "    "    "	where 400 feet of the vein has been

stripped showing a width of 10" - 12" - 24" for the entire distance.

At frequent intervals for another 500 feet on the Fairview and a like distance on Great Mine No. 1 to the south. Below the 400 foot showing, a crosscut has been driven which cuts this lead at a depth of 50 feet. Here the vein width averages 16" along 20 feet of drift driven in both directions. At every point where this high-grade vein has been cut or exposed rich free gold showings are numerous.

Soon after this lead passes onto the Great Mine property to the south, it splits and is easily traced as two veins which continue up the mountain. About half way up, these two veins are cut by a third vein running easterly and westerly. At the intersections, enrichments occur into one of which a crosscut has been driven exposing rich free gold showings.

Similar intersections with like enrichments should be encountered very soon in extending the present Basin Queen drift. Such a condition is clearly indicated on the surface and good values should be disclosed. A study of them at the depth attainable in the present drift will prove valuable and interesting.

Opencuts, short crosscuts and drifts in the scope of required assessment work have been employed to open up the balance of the properties included in the Marty Mines group, viz. the Great Mine and Free Gold Shaft Mine Groups. Numerous quartz veins are encountered at frequent intervals and strong east and west cross-leads cut the general north and south ore system. Enrichments at such points are frequent and may be expected in any other places with further development. The last named groups are on the summit and have little overburden. Much of the vein system is exposed every summer and it is safe to say that large quantities of free gold are present in this elaborate vein system. The southern properties of the Marty Mines will produce, in time, very large quantities of rich free milling ore. The veins and stringers of gold bearing quartz are too numerous to classify or show on the map and much is expected from them with extended future development. Many of the wider veins can be mined alone as high-grade at attractive profits. The eventual production from the whole, including low-grade with high-grade, should be enormous. This area is rich and that tells the whole story in a nutshell.

### Possible Tonnage

Great Mine Group	98,800,000 tons
Free Gold Shaft Mine	114,700,000 "
Fairview & N. Star #1 & 2	32,200,000 "
Sylvia & Sylvia Ext.	10,000,000 "
B. Queen, Acme, Acme Ext.	30,000,000 "
Patented Group	20,000,000 "
Silent Partner Group	30,000,000 "
	<hr/> 335,700,000 "

Milling 10,000 tons per day, this ore supply will last 95 years.

### Assays

In view of the recommendations of this report, which suggests mining and realizing upon certain high-grade deposits before low-grade operations are decided upon or undertaken, only a limited amount of sampling was done in the low-grade deposits.

Silent Partner Claims Nos. 3, 4, 5, 6 & 7 were not sampled for assay, but it is reasonable to assume that, containing as they do, their portion of the known uniform low-grade orebody, average values should continue in this area in like amounts shown in adjacent assays. The several quartz veins appearing here in the mineralized dike are reported by the U. S. Geological Survey to carry "moderate values" which is sufficient for present purposes.

The results of numerous assays by the Helvetia Mining Co. on the Patented Properties, Silent Partner Nos. 1 & 2 and the Falls Claim, are quoted in general here. Values ranging from 45¢ to several dollars per ton were obtained and a safe general average for the whole mineralized zone appears to be from \$1.70 to \$1.90 per ton. Visible free gold samples were rejected altho free gold in showings appear frequently in the old workings and their inclusion in low-grade operations would materially increase assay values. The quartz encountered is of good quality and color and very heavily mineralized with galena predominating.

The following assays were obtained from samples taken on the Basin Queen, eliminating visible free gold and including only quartz and schist matrix or like matter:

Sample No. 1	tr
2	\$0.50
3	tr
4	.10
5	.10
6	tr
7	.35
8	.10
9	2.00

Former assay figures over this area have been higher but the above are reported exactly as taken and run. During subsequent low-grade operations, it will be reasonable to expect the low-grade ore at this point to compare favorably with that adjoining to the south.

On the Sylvia, samples taken across 7 feet of the main orebody returned values of \$1.80 per ton. All visible free gold was rejected.

The following assays were obtained from samples most carefully selected on the Fairview and Great Mine No. 1 claims. Their position, width and length are accurately shown on the accompanying map and will not require description here other than by number.

Sample No. 10	\$16.18 from N. Center G. M. No. 5a
11	3.15 same location
12	.45
13	.80
14	tr
15	tr
16	5.75 averages 1000 ft. in length
17	163.35 " for 400 " " "
18	112.40 same #17 at depth of 50 ft.
19	.40
20	18.40

From the above, it is conclusively proven that the Fairview and Great Mine No. 1 contain a lense of ore in a true quartz fissure that averages \$48.08 per ton over a distance of 2000 feet. It is also proven by assays #17 and #18 that in this lens, there is a rich chimney that averages between \$112.40 and \$163.35 per ton.

In this particular lens, 20,000 tons of ore are already blocked out and proven. To this figure, one must add a like amount of probable ore, giving a conservative estimate of 40,000 tons of high-grade of a valuation conservatively estimated at \$800,000.

Mineralogic data and practice permit us to assume that values in a vein, such as we have here, will continue to a depth equal to  $\frac{1}{2}$  of the vein's surface length. This vein can be traced for a sufficient distance on the surface to safely assume these values will extend to a depth of at least 3000 feet. The Treadwell and other rich mines in the Juneau Gold Belt have attained great depth with rich deep values. The lens under discussion may attain greater length with depth and also increased width. It is safe to assume that the depth of this high-grade chute will be as great at the point at which a continuance of the present Basin Queen drift will cut it. Above this point, the estimated amount of ore to be stoped is conservatively 600,000 tons of an estimated value, on the basis above employed, of \$12,000,000.

Samples No. 10 and 11, taken from the Great Mine No. 5a are representative of showings to be found generally on the Great Mine and Free Gold Shaft Mine Groups.

The numerous cross-leads intersecting the main north and south-leads found in profusion on both these groups warrant the prediction that, at depth, this portion of the Jacob Marty Mines will be the largest producer of high-grade ore. It is apparent that values increase to the south in a marked degree.

In all the foregoing, it is also reasonable to expect greater values with greater depth in both low-grade and high-grade deposits.

#### Mineralogic Conclusions

In view of their large known content of low-grade ore, the Marty Mines, in the last analysis, present a high low-grade proposition. The indicated commercial values which further development will more accurately determine, will likely warrant the eventual installation to mine and mill on the basis of a large daily tonnage.

However, the Jacob Marty Mines own a new and first-class high-grade Amalgamating and Concentrating Mill of 50-100 tons daily capacity. Adjacent to this, a large body of rich free-milling ore has been blocked out which can be cheaply mined and delivered at the present mill for immediate treatment at a nominal cost. The mill is hooked up and ready to run. The added cash outlay to provide means of delivering the ore to the mill is found to be negligible in comparison with the immediate profits to be enjoyed.

Common sense dictates, therefore, that immediate preparations be made to start high-grade mining and milling as soon as possible--leaving all low-grade considerations for some future time.

#### Recommendations

It is accordingly recommended that the rich ore chute on the Fairview property be mined and milled with the least possible delay. There are two feasible methods for consideration and selection and both have certain advantages.

The first and preferable modus operandi consists in installing an aerial tramway, as shown on the accompanying map, from the Fairview property to the present Jacob Marty Mill. The bulk of the main carrying cable necessary for this installation is at present 600 feet south of the proposed location and is strung from the Great Mine Terminal Claim to the old 4-stamp mill on the Silent Friend Mill Site Claim. Being galvanized wire, this cable appears to be in good shape today altho it has been exposed to the elements for years. It is possible to move this cable to the desired locations at a reasonable cost. It is believed this cable will span the entire proposed distance, but, should this not be the case, sufficient other cable is available on Spruce Creek immediately south of the Silent Friend Mill Site Claim. A 5/16" or 3/8" traveling cable, buckets and traveling heads for same must be purchased. Two 10 foot sheaves complete, one with necessary brake equipment, are available for operation and control of the traveling cable. Timber is available for the necessary towers and the loading bunker on the Fairview.

The installation of this tram will take approximately 60 days if no serious delays are encountered and the cost should run approximately \$7000 - \$8000 with \$10,000 allowed as maximum cost figure.

Open-cut mining will be employed to supply the tram with ore. This mining may be done by hand drilling, but it will prove a saving in the first season to install on the Fairview property a portable, gas driven, 2 drill compressor with two jackhammers using 7/8" hex. hollow steel.

A portable compressor of the size and type suitable to the proposed operations is quoted by the Ingersoll Rand Co., F.O.B. Seattle, at \$2987. Suitable jackhammers are likewise quoted at \$170 and \$250 each without hose and fittings. Necessary fittings will cost \$150 and \$250 additional and another \$500 should be invested in steel and the necessary sharpening dollies. It is not efficiently possible to carry air from the compressor at the Marty Camp to the Fairview. Adding freight on new material and equipment and the cost of moving same from Windham to the Fairview will bring the completed cost of new equipment and the tram in running order, including labor, to an approximate total of \$15,000.

Such installation will break and handle sufficient ore to keep the mill running to capacity 24 hours daily at a minimum mining cost and with a minimum crew on the Fairview. When the tram starts operating, gas, oil, powder and food will be carried by the returning buckets to the works above. No power will be required to operate the tram as gravity will furnish more than the necessary energy.

Hand mining is not recommended as it will necessarily be slow and cost three times as much as machine mining besides requiring a number of miners large enough to present housing difficulties on the summit. Quarters on the Fairview will be an important consideration. However, with a limited two shift machine crew, a dining tent and one other tent in addition to the existing cabin will solve the housing and feeding problem. Men employed at the Fairview must live there. A 2000 foot climb daily and return is out of the question.

A loading bunker on the Fairview will be placed that 40,000 tons of ore will be available above its intake.

Following the above procedure, ore should be delivered at the mill in 60 days and regular clean-ups made thereafter. Profits will be quick and large, but the working season will be short--5 months each year being the average maximum period of operations in the open cut between snows. During the first season 60 days must be deducted from this operating period for the installation which leaves 90 days for actual mining operations.

The most important and appealing feature of the above method is that operations start in ore of known value and extent and it only remains to follow the values.

The second method of mining this body of rich high-grade is to extend the present drift on the Basin Queen to the point where it will cut the pay chute at an approximate depth of 1500 feet below the surface showings.

2100 feet of drift will be necessary to reach the north line of the Fairview property where the desired ore is known to exist on the surface. 500 feet of additional drift will be required to reach a point directly under the rich chimney appearing on the surface. (See map referring to Assay #17).

This drift will cost approximately \$25 per lineal foot for 2500 feet, or roughly \$62,500 unless some compensating high-grade ore is encountered and followed during the major operation.

However, it is highly probable that, in extending downward, the ore chute in question may extend some considerable laterally over the line onto the Sylvia Group. In this way, the orebody being sought, or another of equal value, may be encountered at any time and it may not be necessary to drive the total estimated distance to get into the ore deposits now being discussed. This is an uncertainty that must be acknowledged. High grade may be encountered in half the estimated distance or it may be necessary to drive the full 2100 feet to reach it.

The one disadvantage of this second proposal is that profits may be deferred for a longer time than by the first method. The ground to be passed thru drifts easily but it is hard to pull and bootlegs are common. With the proper organizations it is hoped that 15 feet per day can be driven with three shifts. This would require 140 days to drive 2100 feet of drift. If only 12 feet per day were averaged in three shifts, it would take 175 days to drive the same distance.

All other factors are in favor of this method, it being cheapest mining in the long run; it affords a large stoping area estimated at 600,000 tons for this body of high-grade alone; it develops and proves up the large low-grade orebody in which it is driven; it permits of mining operations for 12 months every year regardless of weather conditions; and centralizes all of the work and personnel at the main Marty Camps. By the first method, maintenance of two camps is necessary.

It is certain that this second method will have to be adopted after surface ore has been mined and removed to a level with the proposed upper tram terminal.

By this second method, no time will be lost in starting operations as camps and equipment are now ready for the employment of three shifts at once. A three shift operation in the drift will require the installation of a steel sharpening machine with necessary dollies and shanking tools. Such a machine sells for \$1750 complete, f.o.b. Seattle. This equipment is not only necessary for fast driving operations, but economy dictates its installation. With it and a sufficient steel supply, one steel-sharpener and helper will sharpen, in one 8 hour shift, sufficient steel to serve three shifts underground. Hand sharpening will

require three shifts of sharpeners. As each steel-sharpener and helper cost in wages \$12.50 per shift, this saving of two such shifts daily means a daily saving in wages of \$25 which will pay the purchase price of a steel sharpening machine in 70 days. Ample additional air is available to operate the sharpening machine with the present compressor.

An extra ore car costing about \$250 will be required immediately to extend the drift; and, within the next 500-1000 feet, more ore cars and some means of hauling same will be required to facilitate rapid handling of the muck. A mule or storage-batter locomotive may be utilized. In case of the locomotive, a generator may be hooked-up on the existing power for recharging. This would also supply lights for the camp at a great saving over the present requirement of importing coal oil.

Present quarters are ample for all these proposed operations, but a corrugated iron roof should be laid on the bunk-house and 15 double-decked steel cots with mattresses should be purchased for the general comfort of the miners and mill-men.

No other equipment except a few dishes and utensils are required to round-out this second method of operation.

The ideal operation consists in combining the two proposals just discussed. First, make the project self supporting by erecting the tram and starting mining and milling operations. When this is accomplished, extend the present drift as proposed until the same orebody, then being worked on the surface, is opened up at depth. Thereafter, discontinue open-cut mining and tramming and supply the mill with ore by means of the cheaper and uninterrupted method of stoping.

This plan satisfies the two most important requirements, i.e., quick cash returns and further development of the main ore system underground both at depth and in length. Much additional information must be obtained in this manner or by diamond drilling before an intelligent decision on future low-grade operations and installations can be made.

For purposes of economy and speeding up the handling of supplies, the last  $\frac{1}{2}$  miles of corduroy road into camp from the freight-house should be abandoned and a short switchback road, up the last incline, be constructed for the tractor. This will permit hauling by tractor for the whole distance from Windham to camp and eliminate the heavy expense of man-packing. This is a cheap undertaking. 6 men will clear and grade this road in two weeks.

A fire assay outfit which will cost about \$600 is imperative for future operations of any sort whatsoever.



## 1926 Operations

Operations started June 6th, 1926.

The preliminary work consisted of installing a new 470' penstock for the compressor power, 630' of 3" air line from the compressor to the mine portal and 800' of 1 1/2" water line for supplying the drills with water.

Underground mining started June 10th. This consisted of drifting further toward the Fairview high-grade orebody and driving one crosscut. One shift was employed for 53 working days and drove 215 feet of 6' x 8' drift. Operations closed Sept. 10th.

Surveys for water powers, prospecting, examining and sampling were carried on until Oct. 16th.

Efforts of the Engineering Department and the owner were this year devoted principally to determining the commercial value of the properties now combined in the Jacob Marty Mines Group. The purchase and consolidation of these 35 1/2 individual properties under one head was the result of the operations of 1926.

## Conclusions

The location of the Marty underground workings and Mill are ideal. Situated at the lowest altitudinal point in the consolidated group, drifting is permitted to the north as well as the south thus mining the whole by cheap stoping methods.

Expenditures to date are justified in view of proposed operations and the quantity of known and proven high-grade ore awaiting shipment.

The conservative estimates of the known, probable and possible values to be extracted and recovered almost from the very start of the proposed operations fully justify the additional outlay necessary. These estimates are based on an average valuation of \$20 per ton and may be safely accepted because surface showings, over a distance of 2000 lineal feet, give an average assay value of \$48.08 per ton which is only reduced to \$35.50 per ton when the crosscut assay #18 is substituted for the surface assay #17. The high-grade ore chimney 400 feet in length (appearing in the 2000 feet lens of proven high-grade deposit) and showing a surface value of \$163.35 per ton must continually be borne in mind as a source of immense returns.

The estimate of \$800,000 from known and probable ore and \$12,000,000 from possible ore represents what may be reasonably expected from the one high-grade body alone in this immense acreage. It is certain that other considerable bodies of high-grade exist in this large low-grade mass and they will undoubtedly be encountered in the proposed operations.

At a minimum, 50-100 tons of ore can be treated daily in the present Amalgamating and Concentrating Mill and on this basis \$1000 per day or more may be reasonably expected from mill returns.

The cash outlay required to put into operation either or both of the proposals outlined above is a negligible consideration in view of the returns shown to be certainly possible, and the proposed operating methods are logical.

Any thought of low-grade mining with its large daily capacity and resultant heavy outlay should be deferred until more complete data is assembled. Proof of the extent of the low-grade deposits is not necessary, but the natural results of the second proposal or a combination of the two proposals will furnish valuable information as to the values throughout the deposits for use in deciding all details of such nature at the proper future time. However, one should not allow the immediate possibility from high-grade mining to obscure the ultimate low-grade possibilities of the Jacob Marty Mines. The late Mr. A. H. Brooks, for many years the Head Geologist in Alaska for the U. S. Government made the statement, after years of familiarity with the Windham Bay District, that Spruce Mountain would some day develop into a very big mine. (The Marty Holdings comprise practically the whole of Spruce Mountain.)

The truth of this statement is proven by local examination and geologic study. Local surface indications on the Marty Mines discount many of the original indications of such mines as the Treadwell, Alaska-Juneau and others in the Juneau Gold Belt.

In view of the foregoing, I can recommend the Jacob Marty Mines for additional investment and development along the lines laid down. They are worthy of the additional outlay required and will undoubtedly return large and quick profits.

In conclusion, I feel confident in stating that these properties are past the experimental stage and can be classed as a Mine at the present time. All that appears necessary to make possible the enjoyment of profitable production and gratifying returns is to make the above proposals a fact.

Should any of the points I have laid down be not quite clear, I will be pleased to explain and give any further information within my knowledge.

Respectfully submitted,

<sup>B.S.</sup>  
CARL S. WILLIS  
Mining Engineer and Metallurgist.

WITNESS my hand and Seal  
this 9th day of November, 1926.

### EXPLANATORY DATA

CONTAINING ADDITIONAL DETAILS TO AC-  
COMPANY REPORT OF CARL S. WILLIS, CON-  
SULTING ENGINEER ON THE JACOB MARTY  
MINES AT WINDHAM, ALASKA.

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#### Possible Tonnage

At some future date, operations may warrant the driving of a Main Working Tunnel from the Marty Tunnel Site, which is located 2418 feet east of Windham Bay, to cut the orebody at a point approximately 900 feet below the present drift shown on the Basin Queen property. The "POSSIBLE TONNAGE" of the Jacob Marty Mines is figured entirely above this proposed tunnel and no hoisting or pumping will ever be required to mine the orebody now being considered.

The main orebody on the Great Mine Group outcrops 110 ft. wide. In an ordinary season, the melting snows receding expose this outcrop for 2000 feet; but, in 1926 when all snow disappeared, it was traced and followed for practically the entire length of the group. The orebody consists of mica schist full of quartz stringers. Small ledges and stringers flank the big ledge for 100 feet in width on the hanging-wall side and for 200 feet on the foot-wall side.

The Free Gold Shaft Mine Group is located on the third zone of mineralization and consists of six full claims. The ledge here is not exposed as clearly as the showings on the Great Mine Group, talus and glaciers covering part of it. The ledge is 150 feet wide and consists of quartz stringers in schist. There are a few small flanking stringers in schist on the foot-wall side and over 200 feet in width of quartz stringers on the hanging-wall side.

The North Stars Nos. 1 & 2 show a ledge in like manner, 30 feet in width with the usual flanking zones of quartz stringers, making the whole a good sized body of low grade ore.

On the Sylvia Group, the Basin Queen, the three Patented Claims and the five unpatented Silent Partner claims, the ledge is alternating quartz and schist stringers ranging from 300 to 600 feet in width.

That the "Possible Ore" extends to the depth on which our estimates are based is evident from a study of the geologic features exposed on the Spruce Creek side at elevation 950 feet; and is proven by outcrops of the same ore system exposed on the Sylvia Creek side of Spruce Mountain.

Re the Great Mine, Free Gold Shaft Mine and Fairview, and apropos of the above, surface samples are not entirely reliable as they do not give a true representation of the value of the ore outcropping here. Snows and glaciers have scraped over the rocks year after year, continually robbing these outcrops of values; but, even in spite of this fact or condition, attractive surface values are present and apparent to the naked eye.

#### Assays

Assays #10 and #11 were unintentionally omitted from the map accompanying the original report. Both are located at a point just inside (south) of the north center end stake of No. 5a Great Mine. Assay #10 is taken across a 4 ft. face in a short drift at this point and #11 is taken 20 ft. west from the bottom of a trench blasted across a brooklet and six feet in length.

#### Mining and Milling Costs

The present Marty Amalgamating and Concentrating Mill should treat a minimum of 60 tons per 24 hours of the ore under discussion if adequate facilities are furnished for mining and delivering this tonnage at the mill.

The mercury consumption should run about 2 oz. for each ounce of gold recovered.

The figures given below, representing mining costs, includes 30¢ per ton for tramping the ore to the mill.

In the past, the writer has been able to recover as high as 89% of the free values by amalgamation and this percentage of recovery can be maintained.

Of the combined values, escaped mercury and any unamalgamated free values which make up the residual balance, it will be possible to save approximately 95% by using the present Ferguson Amalgamator as a trap and operating two concentrating tables if necessary, one being now in place and still another available.

Therefore, the ultimate loss in values will be small.

#### Tabulated Costs per 2000 lb. Ton

Total cost of milling.....	\$1.15
Total cost of mining & tramping.....	3.75
General expense.....	<u>1.10</u>
Total cost of mining & milling.....	6.00
including overhead	

The writer bases the above on figures that have been found from experience to apply under difficult conditions; and while conditions on the Fairview are not extremely difficult, they are unhandy and the above

figures may apply as known maximum; altho, it is believed and expected that actual production will cost considerably less than outlined above.

The above costs of mining are also based on operations by drifting and stoping. Since writing the original report, it has been decided that open-cut mining will not be economical because of weather conditions. Hence, drifting and stoping are substituted in these figures; following the method of drifting beside the vein, letting it hang in place until the muck is removed; later shooting down only vein matter and thus eliminate sorting; and, in conjunction, stoping in like manner at desired points from the drifts already driven. Better results and better working conditions will result by this method.

If further information or explanations are desired to supplement the original concise report, they will be furnished immediately upon request.

Respectfully submitted,

CARL S. WILLIS,  
Mining Engineer & Metallurgist.  
Dec. 30th, 1926.

SEAL  
C. S. WILLIS  
Mining Engineer  
Professional Engineer  
Province of British Columbia

J. R. WILLIAMS

Provincial Assayer, Metallurgist and Chemist

Offices & Laboratory  
Credit Foncier Building  
850 Hastings St. W.

VANCOUVER B. C.

Oct. 29th, 1926.

Mr. Carl S. Willis,  
2526 Lincoln St.,  
Bellingham, Wash. U.S.A.

Dear Mr. Willis:

Enclosed herewith are certificates, account and a formal letter to your assays.

It looks as though you had something worth while in the mines you are operating. Material of this kind is very difficult to sample, also to assay, as the possible presence of free gold renders necessary every precaution.

As you know, I am always at your service to assist in any possible way and I hope to be able to assist you further at some future date.

Very truly yours,

(SIGNED) J. R. WILLIAMS

THIS COPY IS CERTIFIED CORRECT

By CARL S. WILLIS

CARL S. WILLIS, MINING ENGINEER.

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UR MADISON WIS 600P MAR 22 1927

LACY CORNELUIS

PLANKINTON BLDG MILWAUKEE WIS

SAMPLE ASSAYS GOLD FOURTEEN AND SEVEN TENTHS OUNCES PER TON SILVER  
FOUR AND FIVE TENTHS APPROXIMATE VALUE THREE HUNDRED DOLLARS PER TON  
VERY HIGH GRADE ORE.

G. J. BARKER  
ASSISTANT PROFESSOR OF  
MINING AND METALLURGY  
UNIVERSITY OF WISCONSIN